

SUMMER 1989

Turfgrass Environment

SCIENTIFICALLY BASED AND OBJECTIVE INFORMATION TO HELP EDUCATE
THE PUBLIC TO THE ENVIRONMENTAL BENEFITS OF TURFGRASSES



PREMIER ISSUE

Introducing "Turfgrass Environment"

The answer to many of this planet's problems lies right under our feet. But, little has been done to make the world aware of this important solution. "Turfgrass Environment," a unique publication prepared by the American Sod Producers Association, is a single step toward a remedy.

Global warming, polluted air, dirty water, erosion and even sports injuries can all be addressed by a single, rather simple solution ... high quality turfgrass. A comprehensive understanding of the turfgrass plant's many capabilities have only recently begun to be explored. The knowledge we do possess offers incredible promise, with even more hope for the future. Too few people ... citizens, scientists, regulators, environmentalists, writers and opinion leaders alike ... are seldom even remotely aware of the advantages of something as seemingly mundane as turfgrass.

The basic purpose of "Turfgrass Environment" is to present scientifically based, objective information, in a variety of forms, that can help educate the population and encourage greater use of turfgrass, thereby expanding the benefits it offers to help solve our global problems. In the belief that widely distributed knowledge and information can make this planet an even more enjoyable place to live, this premier issue focuses its contents on water in our environment and its relationship with turfgrass.

The contents have been prepared for uses in a variety of ways, limited only by the imagination of the recipient. While basic concepts, suggestions and potentials for use accompany each item, these represent only a starting point.

ASPA intends to produce at least one issue of "Turfgrass Environment" each year and will consider creating multiple issues every year based upon a number of factors, including available funds and relevant material. Your reaction to this premier issue, suggestions for improvement and ideas for future editions are encouraged. Please direct your comments to the ASPA office in Rolling Meadows.

We wish to acknowledge and thank Dr. Eliot Roberts, Director of The Lawn Institute, for providing technical assistance and scientific review of the contents.

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Reader Evaluation and Suggestions

Because this is ASPA's first-ever effort in a publication of this type, it is interested in receiving as much feed-back as possible from the Members and other readers. Your comments and suggestions will help evaluate this publication and determine what improvements can be made for possible future issues.

On a scale of 1 for poorest/worst and 5 for best/highest, please rate the following elements:

1. Value of this publication to your business.....	1	2	3	4	5
2. Need for this type of publication.....	1	2	3	4	5
3. Information's accuracy.....	1	2	3	4	5
4. Usefulness in educating people about these issues.....	1	2	3	4	5

I would suggest the following topics and/or authors for future issues: _____

General Comments & Suggestions: _____

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**ASPA Headquarters
1855-A Hicks Road
Rolling Meadows, IL 60008**

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Concepts, Suggestions and Uses

TO OUR READERS: "Turfgrass Environment," while presented in magazine format, is unlike any publication you have seen before and, therefore, it may be somewhat confusing. Each "article" has been prepared for ease of secondary use by the reader or others. Therefore, they have been printed on only one side of the page. Several pages are necessary for some of the more lengthy articles and they too are backed by a blank page. The intent is that these articles will be more readily reproduced and distributed if the use of one does not make it impossible to use any of the others.

Following the "articles" is a section entitled, "Concepts, Suggestions and Uses," which presents some thoughts about each of the preceeding items. "Concepts" will provide a

brief comment about the general purpose of the format used for each article. "Suggestions" include ways the piece might be altered, with additional writing, reproduction ideas or comments related to printing. "Potential Uses" provides thought-starters on the actual distribution of the item to people who could benefit from receiving this information.

"Turfgrass Environment" is a non-copyrighted publication, intended for the wide distribution of educational information. Members of the American Sod Producers Association receive one complimentary copy and are viewed as the best means available to place this information in the public's hands.

The reverse sides of the following articles and information have been left blank.

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For ASPA Files:

Please send samples of how you use the following "Turfgrass Environment" material to ASPA Headquarters, 1855-A Hicks Road, Rolling Meadows, IL 60008.

Please Note:

Where appropriate, the clip art on page 21 can be used to illustrate any of the "Turfgrass Environment" material.



A SCIENTIFIC VIEWPOINT:

DR. J.B. BEARD

SCIENCE SHOWS TURF CAN SAVE WATER RESOURCES

Some published reports claim that turfgrasses are high water users, even exceeding the water use rate of trees and shrubs. The scientific facts are that turfgrass can actually conserve water. Partial evidence of the truth of this statement is provided by nature itself.

In the semiarid regions of the U.S. plains states, grasses are the dominant vegetation, whereas trees and shrubs are dominate in the higher rainfall areas east of the Mississippi River and west of the Cascade Mountains on the Pacific Coast. The point is, that there are many turfgrasses, both natural and naturalized, that are quite low water users.

In what surely must be a "worst-case water-shortage" scenario, studies at Texas A&M University showed that green, functional turfgrass can be retained throughout a 160 day period without using any additional water. Without either rainfall or supplemental irrigation, five different varieties of three warm-season turfgrasses (Bermudagrass, St. Augustinegrass, and Seashore Paspalum) displayed exceptional drought resistance qualities. Accentuating the severity of this drought stress test was the fact that the grasses were grown in three-foot deep sand, which offered almost no reserve water-holding capacity.

What this and other studies have shown is that it's man's decisions and methods concerning specific cultural practices that create a high water use rate in certain turfgrass species, not the plant itself.

Contrary to what some people and groups may propose, grass can indeed be a conservor of water and energy. Perhaps one of the least recognized functional benefits of turfgrasses is the ability to entrap and hold rainfall better than most surfaces, thereby reducing water loss by runoff and enhancing the potential for ground water recharge. In a related dimension, turfgrasses are one of the most cost-effective means of trapping and holding surface water that may be carrying eroded soil and organic chemicals, thereby reducing the amount of siltation

Temperature Comparisons on a Selected Day in August			
Type of Surface	Maximum Daily Temp. (°F)		Nocturnal Min. Temp. Surface Temperature
	Surface Temperature	3' Above Surface	
Green, Irrigated Turf	88°	89°	76°
Synthetic Turf, Dry	158°	96°	84°
Brown, Dormant Turf	126°	95°	79°
Bare Soil, Dry	102°	91°	78°
J.B. Beard			

and organic chemicals that enter sewers, streams, rivers and lakes.

Grass also offers a unique cooling capability that greatly enhances the comfort of people in highly populated urban areas. It accomplishes this at no cost of outside energy or the burning of carbon dioxide creating fossil fuels.

Studies now in their third year consistently demonstrate that actively growing turfgrass will reduce surface temperatures by 30-40° F in comparison to bare soil and by 50 to 70° F in comparison to synthetic turf surfaces. Cement, asphalt and stone surfaces also act as heat sinks with surfaces much hotter than turf.

As an added benefit, turf's growth process removes carbon dioxide from the atmosphere which has been identified as one of the potential factors that may cause global warming. By absorbing carbon dioxide and releasing clean oxygen, the grass plant is helping cool the earth, as well as our homes.

There are many other functional benefits of turfgrasses typically overlooked by the general public. These include:

1. Soil erosion control, which protects a vital national resource.
2. Dust stabilization.
3. Heat dissipation—temperature moderation.
4. Noise abatement.
5. Glare reduction.
6. Reduced runoff loss of precipitation.
7. Higher ground water recharge.

8. Increased degradation of organic chemicals.

9. Safety in vehicle operation and equipment longevity.

10. Facilitates security for key installations.

11. Reduced fire hazard.

12. Reduced problems with pests such as insects, snakes and rodents.

It should be noted that these functional benefits derived from turfgrasses are closely interrelated with water in a number of situations. Furthermore, even turfgrasses that are grey to tan in color due to summer drought stress still retain many of the important benefits listed.

Through education about proper turfgrass selection, irrigation equipment selection and use, man can also realize increased benefits from turfgrass.

That little grass plant most of us take for granted may help make this planet more liveable, especially if we learn to give it a chance to give us all of the benefits it is capable of.

Editor's Note: Dr. James B. Beard is a Professor of Turfgrass Physiology and Ecology in the Department of Soil & Crop Sciences at Texas A&M University, College Station. His research and teaching in Turfgrass Sciences include a broad array of topics including many mentioned in this article. Recognized as a leader by his peers, he has served as President of the Crop Science Society of America and the International Turfgrass Society, as well as being a recipient of numerous honorary positions and awards. Dr. Beard also is the author of six books on turfgrass and their cultures.

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Pre-condition Your Lawn For Drought Success

The wide-spread summer drought of 1988 vividly demonstrated the need for homeowners and professional grounds keepers to know how to best care for their turfgrass when water (natural or applied) is not readily available. In driving through a neighborhood as the summer progressed, you could see sprinklers pouring out water on a lawn that two weeks later was straw-brown. Yet, down the street, another lawn was green even though the sprinklers were seldom seen running.

According to *Ima Sodgrower*, owner of *Anytown's Supersod Company*, one of the differences may have been the drought tolerance of the grass variety itself, but most likely all of the lawns in the neighborhood were put in around the same time, and used the same variety of grass. The greatest differences were probably in how the homeowner used the water available and actually pre-conditioned the lawn for drought success or failure.

In the "land of plenty," most homeowners have given little thought to improving the efficiency of their lawn watering, with little concern for conservation. Hoses were hooked up to sprinklers that were then set out to spew water around the yard until the homeowner's instincts, or a television commercial "told" him it was time to move the sprinkler, or shut it off. How much water was being used, how much was soaking into the ground and how much was wastefully running down the sidewalk and into the gutter were never considered. Starting last summer, all of that began to change. Alternate watering or total outdoor watering bans rudely woke-up many people to the fact that too much precious water has been running down the gutter.

Sodgrower, who has been producing turfgrass sod in the area for 10 years, says that pre-conditioning a lawn for drought is not difficult or complex, it just takes a few more minutes and some forethought. He suggests that before the summer heats up and the homeowner thinks he should be pouring more and more water onto his lawn, he should actually begin his drought pre-conditioning practices.

Change of Perspective

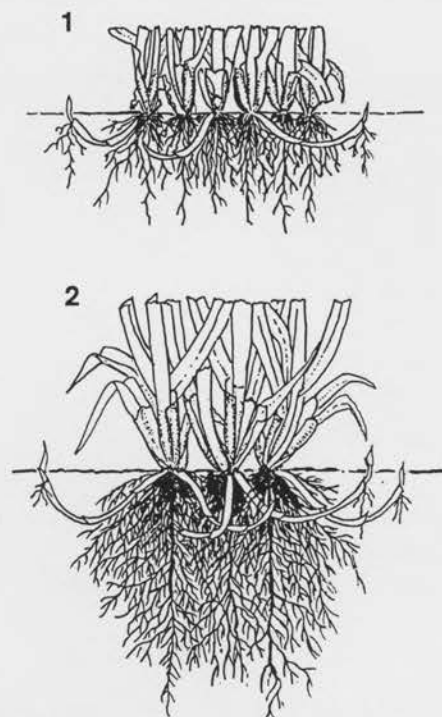
The first step, according to *Sodgrower*, is a simple change in perspective. Rather than thinking only of the lush green blades we see growing, the drought-prepared homeowner should begin to think about the grass plant's roots because that's where the

"action" is when it comes to drought. *Sodgrower* offers these interesting facts to consider: one single grass plant can have 387 miles of roots and in a thick lawn there are six turfgrass plants in each square inch; 850 turf plants in a square foot and about 7 million in an average lawn of 8,000 square feet. Up to 90% of the weight of a grass plant is in its roots. When photosynthesis takes place in the leafy parts, it is the roots that provide the essential nutrients and liquids for the process to work and the plant to grow.

Turfgrass research scientists have been able to breed drought tolerance into the grass plant itself and *Sodgrower* reports that while most turfgrass sod farms now commercially produce these hardy varieties for home or commercial use, most of today's existing lawns were put in before the advanced varieties were available. Nevertheless, he suggests that following a few simple steps can increase any plant's ability to survive severe drought.

Begin Program in Spring

According to *Sodgrower*, drought



A comparison of turfgrass mowed at two heights: the closer mowed turfgrass (1) is finer textured and denser, but has less underground growth of roots than the higher mowed turfgrass (2).

tolerance actions should begin in early spring, when the grass plant is beginning its vigorous new growth. Provide nutrients by applying recommended amounts of a general purpose lawn fertilizer. Garden center professionals, county extension agents and others can recommend the fertilizer type and application rates for the specific variety of grass in question.

Next, make sure the mower blades are sharp throughout the mowing season. Dull blades create more stress on the grass plant and cause it to require more moisture. As the summer heat increases, raise the mowing height and reduce mowing frequency. Never remove more than $\frac{1}{3}$ of the grass blade's length in a single mowing. By allowing greater leaf surfaces, the plant can hold more liquid and the leaves actually shade the root zone from drying heat and evaporation. Grass clippings can be left on the lawn to return nutrients and increase root-zone shading to some extent.

While these steps are important, the key ingredient to a drought successful summer lawn is watering, *Sodgrower* flatly states, particularly how much and how often, and with what type of device.

Frequent, light watering of a lawn should be completely avoided. It can do more harm than good, even for what may have once been a very strong lawn. Applications that only moisten the surface of the leaves and barely penetrate the soils will weaken the root structure because the plant will have little need to sink down deep roots seeking adequate moisture. Shallow roots will be in a soil level that dries out very quickly, thus depriving the plant of needed water and it will soon die.

Infrequent, deep watering in the early mornings or evenings will help the plant establish adequate roots and provide sufficient moisture between waterings. To determine when to water, probe the soil with a screw driver or probe that removes a core of soil at least four to six inches below the surface. When the soil is dry or the probe is difficult to insert into the ground, it's time to water. Probing should be done in several locations around the yard because some areas may hold water better, while others will dry faster. Tree shaded areas may not need as much water, while areas near heat-reflecting buildings will dry out sooner.

If a high-efficiency, in-ground irrigation system with automatic controllers cannot be installed, then the homeowner should use garden hoses with a diameter above

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half-inch and preferably three-quarters to one-inch to supply adequate pressure and flow. The sprinkler should be a variety that delivers large water drops and not a fine mist that evaporates too easily. Uniform sprinkler patterns are also important to avoid dry spots in one area and run-off in another, all under a single sprinkler.

When watering does take place, the object should be to moisten the soil of a depth of at least four to six inches. This will cause the plant roots to sink deeper, seeking the reservoir of moisture that will be there as the upper portions dry out. The deeper rooted plants will be better able to survive extended droughts. Two methods can be used to determine soil moisture depth. The first is continued use of the soil probe described above. The other involves a calculation of water flow and soil penetration.

Using average loam soil as an example, scientists report that it requires 0.6 inches of water to wet soil four inches deep. Sandy soils would require less water and clay soils would require more. To achieve a four-inch soil moisture depth, the homeowner would apply 375 gallons of water per 1,000 square feet. At a standard 40 pounds per square inch water pressure, in a three-quarter inch, fifty-foot hose, 528 gallons of water per hour would be delivered to the sprinkler head. With this watering set-up, it would take slightly less than 45 minutes to release the equivalent of 375 gallons an hour, or the needed 0.6

inches of water to achieve the four-inch moisture depth, on totally dry soils.

Avoid Run-off & Waste

Another key water saving factor according to *Sodgrower* is avoiding visible run-off and waste. Differing soil types and compaction allow water to penetrate at different rates. Watering should be interrupted at the point water begins to accumulate in puddles or actually run-off. Give the water time to soak-in as much as possible and then re-start the watering on that location until the proper moisture depth is achieved. While it should be obvious, it may be worth mentioning, that sprinklers should be set so that they don't throw water onto driveways, sidewalks and sides of houses. Remember, if you don't mow it, don't water it.

The time of day for optimum watering is also important, and often a point of homeowner discussion, debate and argument. Today's professional turf managers have concluded that early morning and evening present the best watering times. Typically, there's less wind to move the water away from its target and the evaporation rates are lower, thus giving the water more time to penetrate the soil. Watering during the heat of the day will cause greater evaporation and in fact the grass leaf has probably curled itself slightly and even closed leaf openings (stomata) to reduce its own evaporative losses. While there may be some slight chance of in-

creasing disease during late night watering, particularly when temperatures exceed 68 degrees, the positive benefits are usually greater.

During times of extreme or extended drought, excess traffic on the lawn should be avoided if at all possible, especially after watering. Drought stressed grass will not mend damaged areas as rapidly as healthy grass, but more importantly, wet soils will compact to a greater extent than dry soils under even normal foot traffic. Compaction will make it more difficult for future watering applications to penetrate to the roots properly.

Lastly, keep in mind that the turfgrass plant is an amazingly resilient body, designed by nature to adapt rapidly to changing conditions and still survive. A lawn that is deprived of moisture for 45 days will typically suffer a 20 percent loss and it will most likely turn to a dormant straw-color during that period, but it probably isn't dead. After several days of moderate temperature and moisture (natural or supplied), re-growth will begin, with visible results about two weeks after the dormancy is broken. It may take three to four weeks for severely drought stricken lawns to fully recover, but it stands a good chance of recovery in due time.

Water is vital to human survival and it is vital to the survival of turfgrass. Fortunately, grass can withstand extended drought conditions and recover nicely, especially if properly pre-conditioned.

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Remarkable People Say Remarkable Things About The Remarkable Grass Plant

Throughout history, man has most often trod across grassy fields or home lawns, with little care or thought to what was taking place right under his feet. Several remarkable people have made equally remarkable statements about what grass provides mankind.



"I believe a leaf of grass is no less than the journey-work of the stars."

Walt Whitman (1819-1892)



"Next in importance to the divine profusion of water, light and air—may be reckoned the universal beneficence of grass. Grass is the forgiveness of nature, her constant benediction."

Senator John J. Ingalls (1833-1900)



"Whoever could make ... two blades of grass grow where only one grew before, would deserve better of mankind, and do more essential service to his country, than the whole race of politicians put together."

Johnathan Swift (1667-1745)



"Grass is what saves and holds the water that keeps life good and going ... It keeps the falling rain from flushing away. Blades of grass take water from the air and transpire it into the ground. That works the other way around too. Because grass blades help put water back into the air so that rain can fall again."

Theodore Roosevelt (1858-1919)

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Turfgrass Sod Saves Time and Water

Whether it's a new home, or one with some years on it, large areas of bare soil present some unsightly and messy problems that can be remedied with a healthy lawn. While turfgrass sod has no equal in providing an "instant lawn," the rising cost and increasing concern for availability of water raises a number of questions regarding different ways to establish or renovate a turfgrass lawn.

Q: Start at the beginning. Are there major differences in preparing a yard for sod or seed?

A: Most experts agree that soil preparation is a major factor in the success of a lawn, whether it's seeded or sodded. Basically, there are no significant differences in preparing the area. These would include tilling the soil to a depth of 4 to 6 inches, removing any debris, rocks, etc., and having the soil tested. As called for by the soil tests, incorporate the nutrients and other amendments and then ensure the planting bed is free of water-holding depressions or other areas that don't conform to the desired finished grade.

Q: Is time of year an important factor for establishing a lawn?

A: Experience has shown that seeded lawns do best when planted in the fall or spring because of less competition with weeds and other pests. Turfgrass sod can be installed at anytime according to most growers and this would include placing it on frozen ground, if the sod is available.

Q: I know what grass seed is, but precisely, what is sod?

A: Turfgrass sod is a strip of mature grass, cultivated from seed or sprigs/stolons by a sod producer for up to two years. The strip will consist of mature grass, its actively growing roots, a very thin layer of soil and some thatch. Usually quoted in sizes of square feet or yards, a common size strip would be 18-inches wide and 6-feet long, equal to one square yard. The strip may be folded or rolled in longer pieces or sold flat in short pieces. Once harvested on the farm, it will require transplanting in 12-48 hours, depending on heat and humidity, before the quality begins to deteriorate.

Q: How quickly can a new lawn be used by an active family?

A: Many new varieties of seed germinate within a few days, providing the beginning appearance of a lawn within a week or two, but experts still suggest that the homeowner must give the lawn a couple of months to establish itself to take the wear and tear of family life.

Sod will look like a mature lawn the day it's installed, but it too needs some establishment time, usually a week or two. Once the sod pieces are thoroughly rooted into the existing soil, it's ready for regular use.

Q: Does sod or seed lawn establishment require more water?

A: You could spread seed across a yard and never water it, where sod would die within a couple of days without water when it's installed. To that extent, seed would use the least amount of applied water, but in a one-on-one, equal comparison, sod will require less water than seed to establish a lawn.

Turfgrass research scientists advise that new turf seedings should be watered lightly, daily to keep the soil surface moist at all times for three to four weeks. They recommend new sod should be watered initially to a soil depth of six inches and then light, daily waterings for two to three weeks. Thus, on the day the seed is planted, or the sod installed, the same amount of water would be required. The differences start to accumulate in the following weeks.

Q: Why does seeding require more water than sod after the first day?

A: Dark, moist soil reflects less incoming solar radiation than grass surfaces, so greater amounts of moisture are lost to evaporation on seeded yards than sodded lawns. Without a plant canopy, water evaporates and is no longer available to the grass seed, whereas the canopy provided by the sod grass blades significantly reduce evaporation, leaving more moisture available to the grass plant's firm establishment. To maintain soil moisture at the four to six inch level, more water must be applied to the seeded soil than the sodded lawn.

Q: Won't a mulch such as straw help hold the moisture on seeded areas?

A: Yes, mulches will reduce water losses to evaporation and encourage warmer soil temperatures as well; however, the seed/mulch combination will still take more water than sod. Care must also be taken in selecting mulches to avoid the introduction of weed and coarse grass seeds that will compete with desirable lawn seeds.

Q: Can you give me an example of how much difference in water use we're talking? Is it really that significant?

A: The potential for extremes is very great in such a question, particularly because of conditions such as weather and soil conditions. Thus, any generalized information must be considered just that, general. In one series of tests for example, new seedings used between 2,250 to 4,125 gallons of water per month, while new sod installations in the same areas used from 1,440 to 2,625 gallons per month. The sodded lawn conserved between 800 and 1,500 gallons of water, a 57% savings over the seeded area.

Q: When does a seeded lawn become as water-use efficient as a sodded lawn?

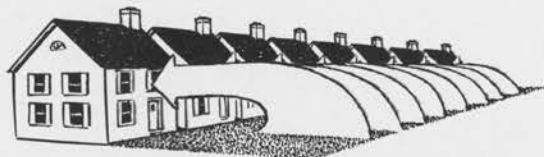
A: So far, there is no real answer to that question. While it would seem that once the seeded lawn was established, had a thatch layer and developed root structure, it would match the efficiency of sod, that may not be the case. On-going studies at a major university are showing that the open soil of newly seeded yards is actually compacted by rainfall and irrigation. Even after two to three years, it will not allow water to penetrate the surface as readily as a sodded area. When the water won't penetrate, it runs off, or must be watered on a slower schedule to allow for proper deep watering.

To establish a mature lawn quickly, reduce costs and conserve water, turfgrass sod installation offers many positive benefits lacking in other lawn establishment methods. While the low cost of grass seed, compared to sod, may sway the initial selection for basic economic reasons, it soon becomes clear that time and water costs, as well as use and enjoyment benefits, are factors on sod's side that should be considered as well.

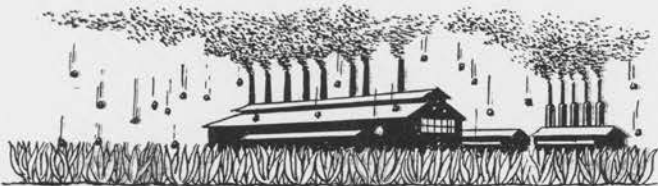
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Here are 10 Great Things

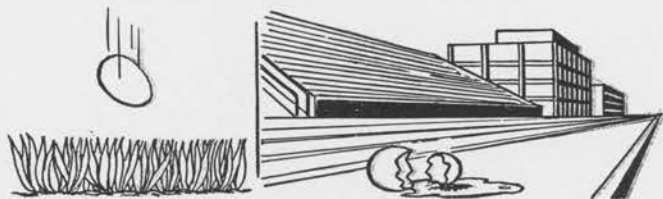
Johnathan Swift, in 1726 said, "Whoever could make two blades of grass grow where only one grew before, would deserve better of mankind, and do more essential service to his country than the whole race of politicians put together." Old Mr. Swift certainly knew what he was talking about. Here are just a few of the benefits turfgrass lawns provide humanity:



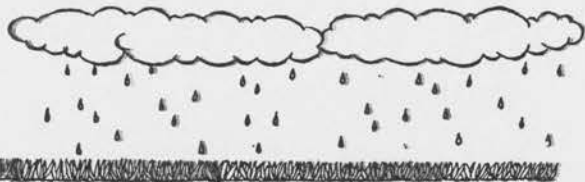
Front lawns of just eight average houses have the cooling effect of about 70 tons of air conditioning, while the average home-size central air unit has only a 3 to 4 ton capacity.



Turfgrasses trap much of an estimated 12 million tons of dust and dirt released annually into the U.S. atmosphere.



Playing fields covered with dense turf have proven safer, as demonstrated by a simple egg drop test. When a dozen raw eggs were dropped from a height of 11 feet onto a two-inch thick piece of dense turf, none broke; two thirds of them broke on thin turf from that height; and from just 18-inches up, all broke on an all-weather track!



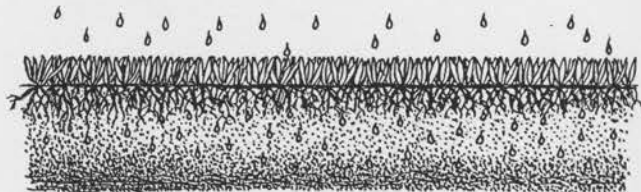
Healthy, dense lawns absorb rainfall six times more effectively than a wheat field and four times better than a hay field. Sodded lawns can absorb 10 to 12 times more water than seeded lawns, even after two years of growth, thus preventing runoff and erosion.



Recovery rates among hospitalized patients are often quicker when their rooms view a landscaped area than patients with non-landscaped views. Where vegetation grows, child mortality, suicide and energy consumption are less than in places where there are no plants.



With up to 90% of the weight of a grass plant in its roots, it makes a very efficient erosion prevention device, also removing soil particles from silty water.



Turfgrasses help purify water entering underground aquifers by its root mass and soil microbes acting as a filter to capture and breakdown many types of pollutants.



A Gallup Survey reported 62% of all U.S. homeowners felt investment in lawns and landscaping was as good or better than other home improvements. The investment recovery rate is 100-200% for landscape improvement, compared to a deck or patio that will recover 40-70%. Proper and well maintained landscaping adds 15% to a home's value according to buyers.



Grass areas quickly affect people's moods by creating feelings of serenity, privacy, thoughtfulness or happiness and its yearly cycles of growth and color change lift human spirits and link urban inhabitants with their countryside heritage.



A turf area just 50-feet by 50-feet absorbs carbon dioxide, ozone, hydrogen fluoride and perosyactyle nitrate and releases enough oxygen to meet the needs of a family of four. The grass and trees along the U.S. interstate highway system release enough oxygen to support 22 million people.

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10 WAYS TO SAVE WATER

When Establishing Lawns

Save water and money by following these 10 simple methods:

- 1. REDUCE STEEP SLOPES IN THE DESIGN ...** Level surfaces allow water to penetrate while steeper slopes encourages wasteful water run-off.
- 2. TEST SOIL AND AMEND ...** Create the best possible growing medium with organic materials, pH balance and nutrients.
- 3. INSTALL AN IRRIGATION SYSTEM ...** water efficiency is greatly improved with a designed system over hoses and especially hand-held sprinklers.
- 4. SELECT DROUGHT TOLERANT VARIETIES ...** Scientific grass breeding has developed many varieties of improved turfgrasses.
- 5. SOD RATHER THAN SEED ...** Turfgrass sod requires 15 to 60 percent less water to establish a lawn than does seeding, depending on the area and conditions.
- 6. USE A SOIL PROBE ...** Water only when a probe or screw driver is difficult to push into the ground or shows the soil is dry.
- 7. WATER IN THE EARLY MORNING OR EVENING ...** Less wind drift and lower evaporation rates increase water efficiency use rates.
- 8. PREVENT RUN-OFF SITUATIONS ...** Apply water for brief periods or at reduced rates to allow greater penetration of the soil before run-off occurs.
- 9. MATCH FERTILIZER TO PLANT REQUIREMENTS ...** Extension agents or professional agronomists can recommend timing and amounts of fertilizer needed by each grass variety. This reduces waste and mowing needs as well as overly succulent, water-wasting growth.
- 10. MOW HIGHER THAN NORMAL WITH A SHARP BLADE ...** Larger leaf surfaces hold plant liquids and shade the root zone. Dull mower blades will increase moisture loss from the plant.

10 WAYS TO SAVE WATER

On Established Lawns

Save water and money by following these 10 simple methods:

- 1. MOW AS INFREQUENTLY AS POSSIBLE ...** Mowing puts the grass plant under additional stress and it will use more water.
- 2. MOW HIGHER THAN NORMAL ...** Greater leaf surfaces hold plant liquids and shade the root zone. Never remove more than $\frac{1}{3}$ of the leaf blade in one mowing. Longer blades usually mean deeper, more efficient roots.
- 3. WATER AND MOW IN THE EARLY EVENING OR MORNING ...** Less wind and heat reduces stress on the plant and allows for greater penetration and less run-off or evaporation.
- 4. WATER FOR DEEP PENETRATION ...** Interrupt watering when puddles or run-off occur, allow the water to penetrate into the soil before restarting. Light, infrequent sprinkling may actually do more harm than good.
- 5. SPOT WATER ...** Drier areas near buildings and on slopes require more water than flat areas where water doesn't run-off.
- 6. AERIFY OR VERTICUT TURF ...** Increased penetration of water and air will place the water where it can be used by the grass plant.
- 7. USE A SOIL PROBE ...** Test soil moisture with a probe or screw driver. Water only when the soil is dry or the probe is difficult to push into the ground.
- 8. MATCH FERTILIZER TO PLANT REQUIREMENTS ...** Extension agents or professional agronomists can recommend timing and amounts of fertilizer needed by each grass variety. This reduces waste and mowing needs as well as overly succulent, water-wasting growth.
- 9. INCREASE DISEASE AND INSECT CONTROL, WITH CARE ...** Drought stressed turf is more susceptible to pest problems, but too much pesticide will increase stress in the plant.
- 10. ACCEPT A LESS THAN LUSH LAWN ...** Grass will naturally go dormant during periods of drought, but will readily regenerate when water becomes available. Reduce traffic on these areas if possible.

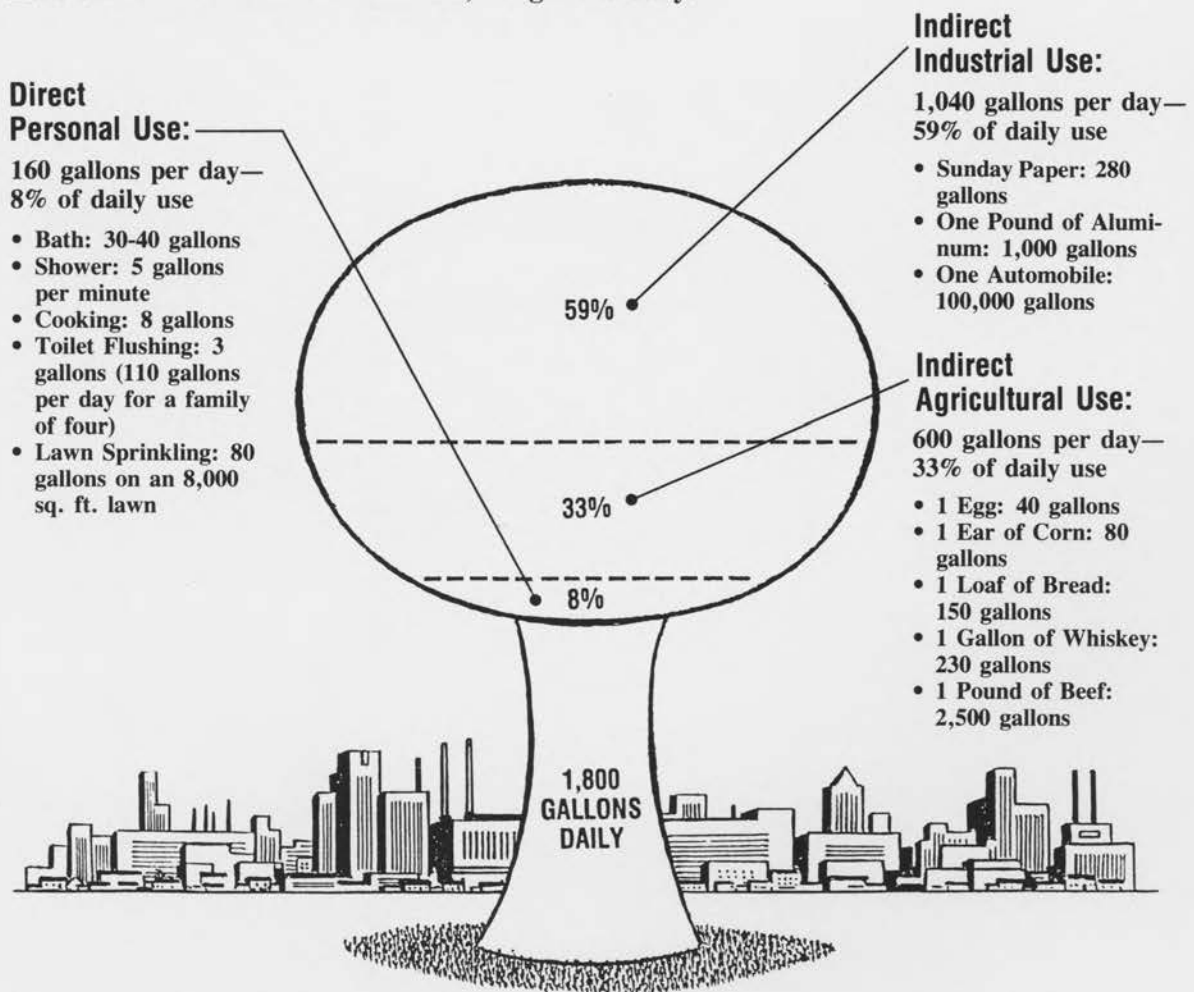
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Outdoor Watering Bans: Symbolism or Good Sense?

While green lawns and flower gardens may be conspicuous consumers of water, one of our most precious natural resources, how effective are outdoor watering bans in helping to solve a very serious problem? As Kathleen K. Wiegner noted in "Forbes" magazine, "Bricks in toilet tanks or shutting off sprinklers hissing on summer lawns makes better symbolism than sense in dealing with water shortages."

According to G. Tyler Miller, Jr., in his publication, "Living in the Environment," the average American uses 1,800 gallons of water daily, some through direct personal use, the rest by indirect agricultural or industrial use.

Here's how we use much of those 1,800 gallons daily:

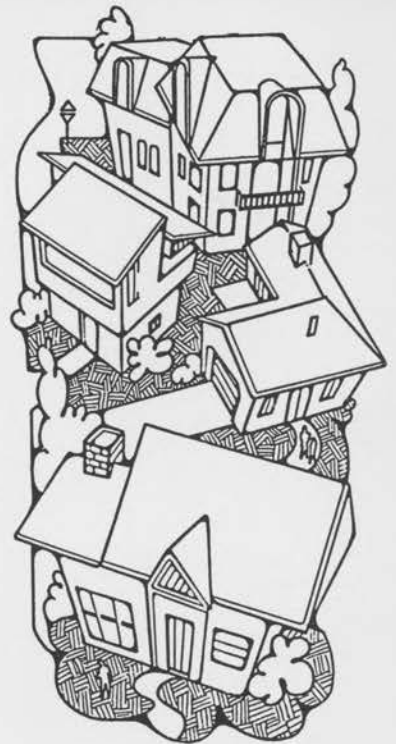
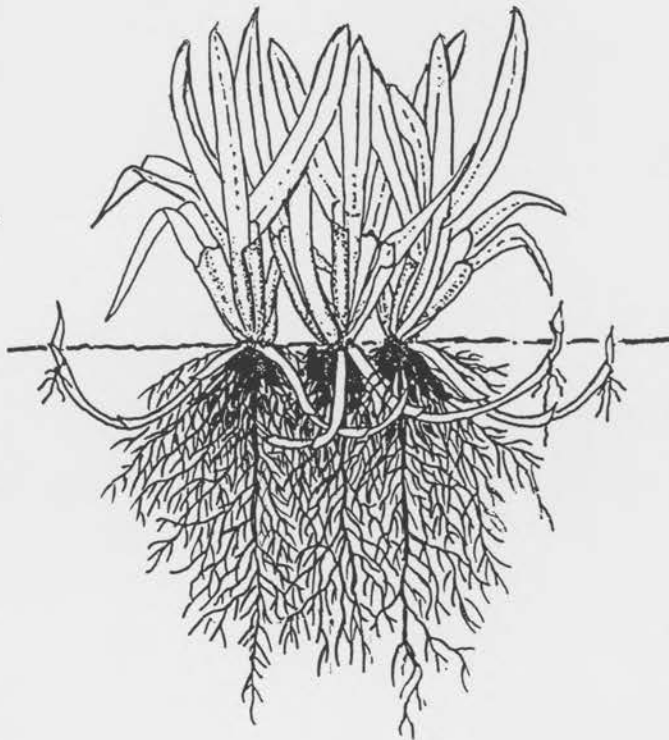


Symbolic acts seldom solve serious problems and more often than not, they serve only to re-direct attention from another problem. For most areas, the problem is not green vs. brown lawns, it's more a matter of determining the value of water and planning sufficiently far in advance to ensure adequate supplies are present when they're needed.

Conservation is important, because water truly is one of our most precious natural resources. The concern is that we create effective conservation programs and not merely symbolic gestures that have little real meaning.

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Clip Art For Illustrating Articles



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Company or Personal Letterhead

Today's date

Editor
Anytown "Gazette"
123 Main Street
Anytown, ZZ

Attn: Letters Editor

LAWN WATERING: A Drop In The National Water Bucket

Of the 82-billion gallons of water consumed each day in the U.S., just 7.3 billion gallons are for domestic use, a little over seven percent of the total. But, *less than one percent* of the domestically used water is utilized to irrigate landscape plants! 73 million gallons of water used on landscape plants is a lot of water, but by comparison, it is *less than nine-tenths of one percent* of the nation's water use. And, it is certainly less than the 100 million gallons of water lost on a *daily* basis by New York City because of an aging and broken system.

According to one source, while 82 billion gallons of water are taken from ground water supplies each day, only 61 billion gallons are replaced through rain or run-off, a daily deficit of 21 billion gallons. During times of extreme drought, the severity of the problem becomes more noticeable and governmental bodies ... local, state, regional and federal ... determine it's necessary to take some actions.

The usual first-phase of a water conservation action is to limit the days or times of day when yards can be watered. The next phase brings on total outdoor watering bans. While landscape watering is a highly visible use of water, facts clearly show that banning such watering won't refill anyone's faucet.

The front lawns of an average block of eight houses provide the cooling effect of about 70 tons of air conditioning, according to researchers, while the average home-size central-air unit has a 3 to 4 ton capacity. Other scientists have found grassy surfaces will be 10-14 degrees cooler than concrete or asphalt on a summer day, while synthetic turf can reach 140 degrees when the air temperature is only 90 degrees.

Through photosynthesis, grass plants absorb carbon dioxide, ozone, hydrogen fluoride and perosyacetyl nitrate, while releasing clean oxygen. Researchers note that a 50-by-50-foot turf area produces enough oxygen to meet the needs of a family of four.

There are many other benefits of lawns and landscaping such as noise reduction, allergy control, glare reduction, erosion control, increased real estate values and water filtration.

Perhaps lawns don't have to be maintained as lush as they could be, and we know that most lawns will recover from drought dormancy, even if they do become quite brown. At the same time, let's not think that curtailment of lawn watering, which is a drop in the national water use bucket, will really cure any water shortage or refill the faucets.

Sincerely,

Ima Sodgrower

Concepts, Suggestions and Uses

PAGE 5

SCIENTIFIC AUTHORITY ARTICLE: "A Scientific Viewpoint: Science Shows Turf Can Save Water Resources"



A SCIENTIFIC VIEWPOINT:
DR. J.B. BEARD

SCIENCE SHOWS TURF CAN SAVE WATER RESOURCES

Some published reports claim that turf grasses are high water users, even exceeding the water use rate of trees and shrubs. The scientific facts are that grasses actually conserve water. Periodic evidence of the truth of this statement is provided by some facts:

In the arid region of the U.S., where water is scarce, the University of Arizona, Tucson, has conducted a study of the water use of the higher water using turf and the lower water using shrubs. The study was conducted in the Tucson area, where the University of Arizona is located. The study was conducted in the Tucson area, where the University of Arizona is located.

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Temperature Comparisons on a Selected Day in August

Type of Surface	Minimum Daily Temp., °F	% Turf Surface	Maximum Daily Temp., °F
Grass, Turf	68°	100%	82°
Grass, Sod	68°	100%	82°
Grass, Sod	68°	100%	82°
Grass, Sod	68°	100%	82°

and organic chemicals that enter streets, lawns, and lawns.

Grass also offers a unique cooling capacity that greatly reduces the amount of heat in highly populated urban areas. It accomplishes this by the use of evapotranspiration.

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Concept: Complex issues, often times surrounded by debate, can best be addressed with the presentation of unbiased, scientifically documented information, offered in non-scientific language. The authority and credibility of the author must be sufficiently high to merit recognition and believability on the issue. The article can present substantiated findings, in a non-emotional, non-argumentative manner.

Suggestions: The article prepared by Dr. James Beard provides an accurate presentation of the relationship between turfgrass and

water. Because of the years of experience Dr. Beard has in this subject area, and the care with which the article was prepared by him, it would be best if this article be edited only as necessary, by a highly competent professional editor. Because this is a bylined article, identified with Dr. Beard, inserted additions would be totally inappropriate.

Potential Uses: See Potential Uses section of the magazine article entitled, "Pre-Condition Your Lawn For Drought Success." The same potentials would apply to this article.

PAGE 7

MAGAZINE-LENGTH ARTICLE: "Pre-Condition Your Lawn For Drought Success"

Concept: Publications of all types often seek well-written articles that address timely issues with facts, at the avoidance of opinion. "How-to" articles seem to be gaining in popularity, as readers gain new information that can be helpful to their personal activities. Magazine-length is typically longer than a news article and as such will limit its acceptability to those publications that are capable of printing more in-depth items, such as this one.

Another important point to consider is that unlike daily newspapers, magazines usually have a rather long lead-time between article acquisition and printing. Thus, it is important to begin working with editors and offering articles or suggestions many months in advance of a proposed use date. This may cover a period of several months.

Suggestions: This magazine article can be localized quite easily in a number of ways. We have chosen to use "Ima Sodgrower" as a fictitious name for the article's source. Wherever this information or name is printed in italics, the actual article user should insert relevant information about himself and his farm operation. Localizing and personalizing of an article will make it more interesting and useable to the editors and readers.

In preparing this article for possible publication, it would be best to re-type it on plain white bond paper, double-spaced. This will allow for easier editing by the publica-

tion. A letter of introduction on company letterhead would also be recommended.

Photographs or illustrations will usually be considered necessary for an article of this length. High-quality pieces should illustrate any of the factors mentioned in the article, or be noted as something to avoid, such as driveway watering. Depending upon the publication, color photos may be required, while others will accept only black and white.

Potential Uses: There are many different publications that seek and accept "free-lance" magazine-length articles. While national circulation publications are usually much more difficult to work with, city, state or regional general circulations magazines, as well as special-interest magazines, abound in most areas. Consideration can also be given to offering this type of article to newspapers who provide a Sunday "magazine" with their newspaper.

Other considerations would include:

1. Offering the article to the county extension agent for use, reprinting and distribution.
2. Working with the region's landscape architect, contractors or ground maintenance publication editors to achieve printing in their membership publications.
3. "Advertorial" is a term used to describe an article that is printed in space purchased by the firm, which appears similar to the remainder of the publication. Most publications

Pre-condition Your Lawn For Drought Success

The widespread concern of drought is a reality that cannot be denied. It is a reality that cannot be denied. It is a reality that cannot be denied. It is a reality that cannot be denied. It is a reality that cannot be denied.

According to the National Drought Mitigation Center, the drought is a reality that cannot be denied. It is a reality that cannot be denied. It is a reality that cannot be denied. It is a reality that cannot be denied. It is a reality that cannot be denied.

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will usually require that some heading, such as "special advertisement," be placed at the top of the page, to designate this as a paid-for insert and not a part of the magazine's regular editorial features.

4. Once printed, in any source, reprints of the article can usually be obtained from the publication directly, or made by photocopier or printer, with copyright permission granted by the publisher. Reprints can be very useful in further extending the distribution scope of

the information.

5. The "article" can be shared with an editor in its "as is" state, to determine if there is interest in the topic. It can be clearly explained that the information has been developed by an international trade association as the basis for localized articles that address important issues. The editor can then decide if there's sufficient merit to rewriting the article for use in his publication, either by his staff or the presenter.

PAGE 11

QUOTATIONS PLAQUE: "Remarkable People Say Remarkable Things About The Remarkable Grass Plant"

Concepts: Great leaders and personalities often make highly quotable comments because of the skill with which they have honed their oratory abilities and their natural gift to communicate. These comments become both memorable and pointed, not only because of what was said, but who said it. These quotes are authentic and demonstrate the historic recognition turfgrass has held in our society.

Suggestions: This material may be used either as individual segments, or as a total unit, as presented here or in many other forms. The drawings have been reproduced for ease of further reproduction on photocopies or by professional printers.

Their final size can be enlarged or reduced to suit individual needs, and, with the addition of color while being printed, they can be easily made into frameable reproductions.

Potential Uses: Whether used together or separately, these quotations provide unique statements in support of the importance of turfgrass. Some of the ways this information

can be used include:

1. Quote-of-the-quarter — with a single remark being reprinted and distributed to further emphasize the value of turf in our society. Additional information about the company could be included on the reverse side, or they could be sent as self-mailer cards.

2. Framed plaques — with matting and mounting, this could be used as a presentation plaque, or simply as a wall decoration.

3. Public meeting quotations — to better make a point on the importance of turfgrass, citing a renowned individual who held a strong view on the subject can help reinforce your own viewpoint. These could also be incorporated into letters to officials, or others considering the importance of grass and the environment.

4. Attention-getting uses — included on business cards, mailing pieces, advertisements, etc., could be a very effective means of communicating with the public while still maintaining a high level of professionalism.

PAGE 13

NEWSPAPER COLUMN ARTICLE: "Turfgrass Sod Saves Time and Water"

Concepts: Newspaper garden columns attract considerable readership throughout the year, particularly during the beginning of the growing season, or during times of drought, stress, disease infestations, etc. Additionally, because of the many highly technical questions that are posed to the newspaper's columnists, no one individual can possess the knowledge to answer all questions. Therefore, many newspaper columnists will welcome articles, information and sources that can be of assistance to them.

The "question/answer" format provides a reader-friendly means of presenting information that will seem more conversational and therefore more informative. Editors or writers can easily remove or insert questions of interest to a particular audience in this format.

Suggestions: This article can be "local-

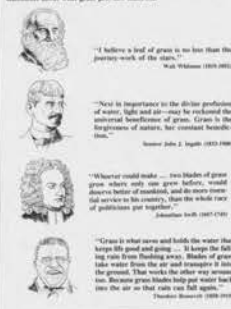
ized" by the insertion of an individual turfgrass sod producer or other knowledgeable source; however, because of the scientific findings mentioned in the article, care should be taken that the local author is not given credit for this information, in the form of a quotation.

A wide range of possibilities exist for seeking this article's publication. These would range from simply sending it to the editor/writer with a short cover letter, suggesting they consider the topic, to a total rewrite, incorporating new and localized information based on additional findings.

Potential Uses: (See Potential Uses section of magazine article entitled, "Pre-Condition Your Lawn For Drought Success.") The same potentials would apply to this article.)

Remarkable People Say Remarkable Things About The Remarkable Grass Plant

Throughout history, man has spent great effort to grow grass. In fact, the first recorded reference to grass is in the Bible. Several remarkable people have made equally remarkable statements about grass. Here are some of them.



Turfgrass Sod Saves Time and Water

Whether it's a new home, or one with some years on it, large areas of turf and sod are required to create a healthy lawn. White turfgrass sod has no equal in providing an "instant lawn." The saving cost and increasing concern for availability of water makes a number of questions regarding different ways to establish or maintain a turfgrass lawn.

Q: What are the benefits of turfgrass sod?

A: Turfgrass sod is a major factor in the success of a lawn. Whether it's sod or sodless, sod is the most significant difference in preparing a lawn. Sod is made by growing grass in a nursery, where it is grown in a depth of 4 to 6 inches, covering any holes, cracks, etc., and having the soil level. As called for by the soil, the sod is grown in the nursery and other amendments and then covers the planting bed in the field of water-laid sod. Turfgrass sod is the most significant difference in preparing a lawn.

Q: Is turfgrass sod an important factor in establishing a lawn?

A: Experience has shown that sodded lawns do have a significant advantage in the fall or spring because of the sod's ability to establish a lawn. Turfgrass sod can be installed at any time of year, and it will establish a lawn in a matter of weeks.

Q: I know what grass seed is, but I don't know what turfgrass sod is. Can you explain?

A: Turfgrass sod is a strip of mature grass, cultivated from seed or grown from a sod producer that is up to 18 inches long and 4 to 6 inches wide. The sod is grown in a nursery, where it is grown in a depth of 4 to 6 inches, covering any holes, cracks, etc., and having the soil level. As called for by the soil, the sod is grown in the nursery and other amendments and then covers the planting bed in the field of water-laid sod. Turfgrass sod is the most significant difference in preparing a lawn.

Q: How quickly can a new lawn be established by sod?

A: Many new varieties of sod grasses within a few days, providing the beginning appearance of a lawn within a week or two. But experts will suggest that the homeowner must give the lawn a couple of months to establish itself to take the wear and tear of traffic.

Q: How much water does a new lawn need?

A: Turfgrass sod is a strip of mature grass, cultivated from seed or grown from a sod producer that is up to 18 inches long and 4 to 6 inches wide. The sod is grown in a nursery, where it is grown in a depth of 4 to 6 inches, covering any holes, cracks, etc., and having the soil level. As called for by the soil, the sod is grown in the nursery and other amendments and then covers the planting bed in the field of water-laid sod. Turfgrass sod is the most significant difference in preparing a lawn.

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Q: Why is a sodded lawn so much better than a sodless lawn?

A: Sod is a strip of mature grass, cultivated from seed or grown from a sod producer that is up to 18 inches long and 4 to 6 inches wide. The sod is grown in a nursery, where it is grown in a depth of 4 to 6 inches, covering any holes, cracks, etc., and having the soil level. As called for by the soil, the sod is grown in the nursery and other amendments and then covers the planting bed in the field of water-laid sod. Turfgrass sod is the most significant difference in preparing a lawn.

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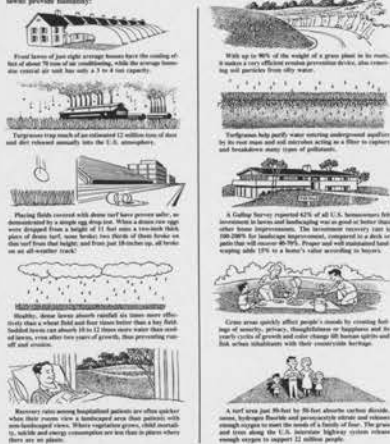
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BRIEF FILLERS: "What Has A Lawn Done For You Lately?"

WHAT HAS A LAWN DONE FOR YOU LATELY? Here are 10 Great Things

Jonathan Swift, in 1724 said, "Whoever could make two blades of grass where only one grew before, would deserve better of mankind, and do more essential service to his country than the whole race of politicians put together." Old Mr. Swift certainly knew what he was talking about. Here are just a few of the benefits turfgrass brings people home.



Concepts: Quickly read, brief items often catch a reader's attention with easy to understand information. In many newspapers, such items are called "fillers," as they help to fill the bottom portion of the page's columns. Magazines may use "fillers" to make a point related to a longer article, or as in newspapers, to complete a page layout.

Suggestions: This material can be used as 10 separate items or, as was done here, as a complete article on the benefits of turfgrass. They could be reproduced in various sizes, depending upon their intended final use, and colors could be added to help distinguish one

from the next.

Potential Uses: Because of the versatility of "fillers," their potential uses are quite large. Here are just a few:

1. Provide them, as is, to newspaper or magazine editors to use in their publications on a space-available basis.
2. Incorporate one or more into an article or speech to emphasize a point on the positive environmental benefits of turfgrass.
3. Reproduce them, separately or as a unit, for distribution in meetings, or as mailers to customers, clients, government officials, etc.

INFORMATIVE CARDS: "10 Ways To Save Water When Establishing Lawns"/"10 Ways To Save Water On Established Lawns"

Concepts: Brief, to-the-point, easily understood and used suggestions will be more readily used than long, involved and complicated directions. Because of its small size, the cost to produce and distribute this information is reduced, thereby making it possible to expand distribution and encourage even greater usage.

Suggestions: These cards have been prepared for immediate use, either by simply photocopying or by more formal presentation through printing. They are sized to fit into a standard business envelope, as a bill-stuffer or in a pick-up stand placed on a business counter such as in a garden center or nursery. The final size can be modified by photographic enlargement or reduction, or by adding additional space and/or information to the lower portion of the card. The cards can be printed on opposite sides of the same sheet, or they can be presented as separate cards, depending on the user's desires.

Personalized, company contact information such as company name, address, phone or logo can be added to the lower portion of the card. The type style should match that of the card information and this can be accomplished by most printers because of the common type style used elsewhere on the card. This personalized section can be the same color as the top portion, or a printer can use a different (complimentary) color, or reverse the type, that is, have the type appear to be the same

color as the paper, with black or color ink serving as a solid background for the type portion.

Potential Uses: Because of their relatively low cost, these cards can be used in a great number of ways, some of which are:

1. Business counter pick-up — available for customers to pick-up at or near a cash register or associated display, in a retail turfgrass sod outlet, garden center, nursery or other high traffic area.
2. Direct mail — printed one-sided on suitable paper stock like a postcard, the "blank" side can become address and postage side, with recognition of the mailing firm on the return address.
3. Advertisement cards — with the 10 informative tips on one side, the reverse side can present information about the business such as special pricing, availability, delivery, etc. These could be mailed or distributed by hand and used as a "door hanger" in a new development or other potentially high user area.
4. Bill stuffers — a water service company, garden or nursery center may welcome this type of information as a part of their normal mailings. When printed on light-weight stock, they will seldom increase postage costs, while providing a valuable public service to the customer. Printed in very large quantities, the cost per card will be nominal.



ORDER FORM

For Additional Copies of "Turfgrass Environment"

A limited number of additional copies of this premier issue of ASPA's "Turfgrass Environment" magazine are available at a cost of \$3.00 ea., on a first-come, first-served basis.

Orders must be pre-paid (U.S. funds only) and will be shipped via surface means, postage paid.

Name _____

Firm _____

Address _____

City _____

State/Prov _____ Zip _____

Please send _____ Copies at a cost of \$3.00 each.

Payment of \$_____ is enclosed.

Charge to: ☐ Visa ☐ Mastercard ☐ Am Exp

Card # _____

Expires _____

Signature _____

Place
Stamp
Here

**ASPA Headquarters
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Rolling Meadows, IL 60008**

American Sod Producers Association
1855-A Hicks Road
Rolling Meadows, IL 60008

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U.S. POSTAGE
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60008
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