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Publication from**

**NaturaLawn of America**

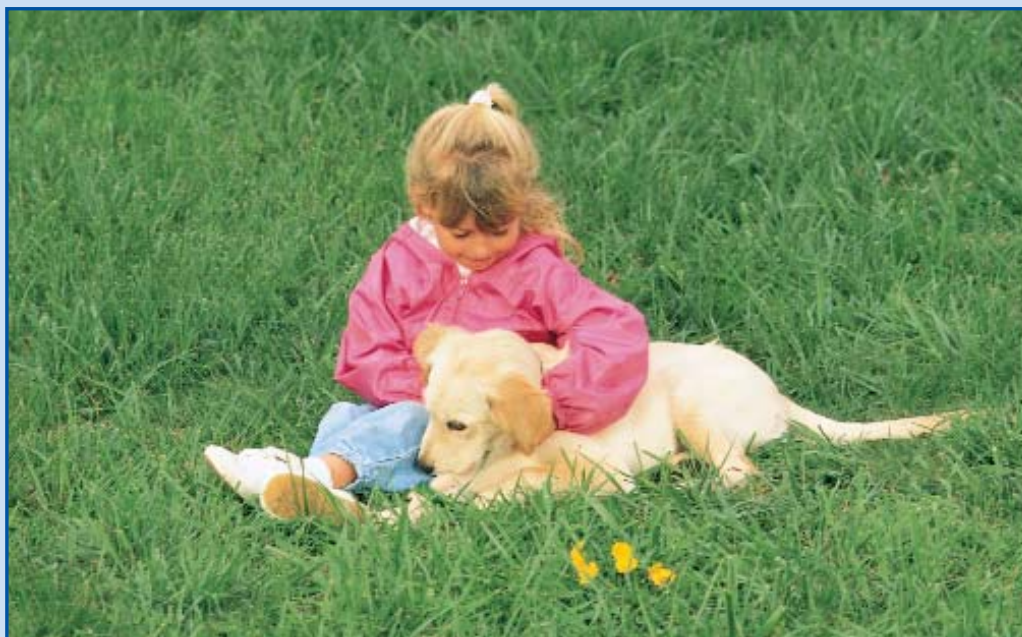
**Helping To Protect Our  
Wildlife And Waterways**



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# How To Have A Healthy Lawn

Without The Excessive  
Use of Chemicals!



**NaturaLawn<sup>®</sup>**  
**of America**

THE LEADER IN ORGANIC-BASED LAWN CARE

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# Grass Facts

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:

- ✿ The 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.
- ✿ Playing fields covered with dense turf have been 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!
- ✿ 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.

## Welcome, Lawn Care Lovers! A Letter From The President

Lawn care has many aspects that can create a “*friend or foe*” image to the lawn care consumer. In general, the homebuilding industry and homeowners have high expectations for turf and turf-care practices. The following are just some of those expectations:



Enjoy your lawn and please  
*stay on the grass!*

- ◆ Lawns should grow when and where you want them to; (but not necessarily where it is possible for a lawn to grow).
- ◆ Lawns should look perfect during the entire year!
- ◆ Lawns must not be an obstacle to your pursuit of leisure time and relaxation or professional and social activities.

**These are not easy tasks, nor realistic expectations.**

Research shows many benefits are derived from lawns, other than the aesthetic values associated with lawn care. Perhaps two of the most important technical benefits are the turf’s ability to:

1. minimize soil erosion.
2. “*intercept*” excessive amounts of fertilizers and pesticides by tying them up and preventing movement.

By itself, turf cannot do the job of pesticide and fertilizer filtration. Based on this realization, everyone involved must take a hard look at general lawn care practices.

Historically, lawn care programs were designed as a “*one-treatment-fits-all*” approach. This philosophy allowed blanket-applications of pesticides over entire lawns without considering whether or not a weed or insect problem existed.

Turfgrass breeding efforts were designed to give the consumer the types of grasses that were aggressive growers and dark in coloration. In order to perform at their peak, these grasses required very high amounts of nitrogen. This often predisposed turf to insect and disease problems and thus encouraged and required additional pesticide treatments.



To justify cost increases, turf industry service companies opted to use inexpensive, inorganic, and synthetic sources of fertilizers. Many of these replacement products contain high soluble salt sources that can be detrimental to the microscopic plants and animals that live in soil.

**A**s the growth of the lawn care industry further increased, marketing and advertising campaigns convinced the general public that lawns should be “picture perfect” green and absolutely weed and insect free. This promise of perfection would be provided by the lawn care company with routine calendar treatments of fertilizers and chemicals.

This “*green myth*” of the perfect lawn has been used extensively for over two decades with little regard to educating the lawn care consumer as to the reality of lawn care practices. In reality, the “*green myth*” is just that - a myth. Lawns will always have some weeds and insects and most lawns will always have some bare spots and tend to go brown during the summer or other stress periods.

So now, with the stage set, we hope you’ll spend some time reading this NaturaLawn® of America booklet. It is by no means the entire answer to lawn care problems, but through 30 plus years of practical experience, we’ve made significant improvements over traditional chemical lawn care.

We hope you’ll find this information useful in understanding how you can have a healthy lawn *without the excessive use of chemicals*.



Sincerely,

*Philip E. Catron*

Philip E. Catron, M.S.  
Certified Professional Agronomist  
President, NaturaLawn of America, Inc.

**H**ere is an introduction to lawn care - a short course in understanding the simple needs of a very complex ecosystem.

Your lawn is the foundation for establishing an attractive landscape setting for your home. By providing basic requirements - *lime, sulfur, organic sources of fertilizer, water, and proper mowing* - almost everyone can have a decent lawn.

- **Lime/Sulfur** - Soil acidity is measured in terms of a unit called “pH”. When the soil pH is out of balance, nutrients may become unavailable. Lime or sulfur are used to correct an out of balance soil and can be applied during any season. Soils with a high pH (above 7.2) require sulfur to lower the pH. Soils with a low pH (below 7.0) require lime to raise the pH.
- **Fertilizer** - Cool season grasses (bluegrass, ryegrass, fescue, etc.) should be fertilized lightly in the spring and a bit heavier in the fall. The application of too much fertilizer or the wrong type of late in spring or summer can predispose the turf to drought, insect, and disease damage.
- **Water** - For the homeowner, the time to water a lawn is whenever they are able, be it day or night. However, watering must be done properly. During extended drought, one good watering every 3 - 7 days should be adequate. Enough water should be applied to moisten the soil to a depth of at least 6 inches (usually 1 - 1½ hours for each area the sprinkler sets until the entire lawn is covered).

**H**ealthy turf can survive short droughts. Prolonged hot, dry periods may cause the grass to go dormant and turn yellow-brown. These lawns will recover as cool, moist conditions return, provided they have not been subjected to other stress (mowing, insects, etc.).



*Remember - water infrequently but deeply with minimal surface runoff.*

- **Mowing** - Proper mowing can save a lawn from summer destruction. Always maintain a sharp blade. Turf mowed with a dull blade is shredded and ripped rather than cut. This not only is unsightly but “wounds” the grass and causes excess moisture loss, but also creates a favorable condition for disease and insect occurrence.



Mow the lawn when it needs mowing, whether once a week or every four days. Unless the lawn is extremely high and expelled clippings are smothering turf, do not collect clippings. Returning clippings recycles valuable fertilizer and also feeds the organisms that break down thatch. Leaf clippings do not contribute significantly to thatch but rather aid in thatch breakdown.

- **Diseases** - Occasionally lawns will be attacked by one of many diseases. The disease pathogen is always present either in the soil, thatch, water, turf, or air. Under the proper temperatures along with the right humidity and/or moisture a disease will occur.

***Because weather is uncontrollable, a chemical fungicide program to ensure disease prevention is unreliable and can be costly and very damaging to beneficial organisms, especially earthworms.***



# S

## oil & Fertilizer

The use of the terms “*natural*” and “*organic*” can be very misleading and cause confusion if not used properly.

In its strictest sense, any material containing carbon could be considered “organic”. Plastic, for example, could well be considered “organic” by this definition and, as such, we shouldn’t refer to all fertilizers as organic, but rather organic-based.

From the public’s viewpoint, as well as organic farmers’ and gardeners’, organic is a term used when referring to nitrogen fertilizer sources that are derived from something that was once living, such as plants or animals and their by-products. At NaturaLawn of America that is the way we also interpret “organic” and feel it is deceptive to call fertilizer “organic” simply because it may have carbon in it.



# N

## atural Minerals

Healthy lawns also require phosphorus and potassium. These should be derived from natural mineral sources and deposits. Phosphorus and potassium are critical in helping to build a healthy soil that encourages dense root systems, vigorous turf, and promotes active soil organisms such as earthworms and beneficial insects.

Phosphorus and potassium derived from natural sources are premium products and can be relatively more expensive than the traditionally used synthetic sources used by most lawn care companies. NaturaLawn of America believes that the benefits of using these natural mineral sources far outweigh the economics involved.

## **S**oil, The Foundation

Soil is the backbone for supporting plant life. Think of the soil as the foundation for a house and the house being built is your lawn. If two identical “houses” were built side by side with one having a solid concrete foundation, while the other was built simply onto the earth’s surface, both houses would continue to look identical until some type of “stress” was placed on them. Let’s say a minor earthquake occurs and damages both homes. It’s safe to assume that the house built on the strong foundation will fare better than the other - even though both houses **looked** identical.

A lawn grown under proper soil conditions is similar to the house built on a solid foundation.

Most lawn care practices forget the importance of the soil and feed only the grass. NaturaLawn® of America’s lawn care program is founded on the premise that:

***You are not  
growing a lawn,  
you are building  
a soil foundation.***



## **F**eeding The Soil

You do need to feed the soil with fertilizer, but not just any fertilizer. Green plants may not know the difference between natural and organic sources of a nutrient versus synthetic fertilizers, **but the soil organisms do!**

By applying natural and organic-based fertilizer to your lawn during the year, you will indeed be feeding the grass plants; but you’ll do so by feeding the soil life first. This builds the foundation on which your lawn will thrive.

## Pesticides - Handle With Care

Pesticides are materials used to control insects, weeds, diseases, and a host of other pests - not just insects. These materials can be synthetic (man-made) or biological and biorational (derived from items in nature).

There are many common household items that we do not normally perceive as pesticides, yet they are. A few examples are:

- ◆ Clorox, used in the washing of our clothes, is an EPA registered pesticide.
- ◆ Common soap mixed with water and sprayed onto potted plants is considered a pesticide.
- ◆ A pet's flea collar is a pesticide.
- ◆ The surgical room at a hospital has been treated with pesticides.
- ◆ Your lawn care service may use pesticides.



## Someone You Can Trust

Pesticides (and all chemicals) are like machines; they cannot think or make decisions, we must do that for them. At NaturaLawn of America, we understand the public's concern and are aware of the dangers that a misused pesticide can bring to us and the environment.

## Chemical Use or Abuse

Each of us has a responsibility to ensure we do not misuse a chemical by becoming complacent or uncaring.

A pesticide can be misused in several ways:

- ◆ Applying too much (“*if a little works good, then a lot must work better*”).
- ◆ Using a material on a plant or animal that is sensitive can cause plants to die and animals to become sick.
- ◆ Pouring unused or excess materials down the kitchen sink, drain, or gutter is a direct pollutant to our waters and soils.

## **R**educed Usage

NaturaLawn® of America’s Alternative® and Natural Alternative® lawn programs have been able to reduce the use of insect and weed control pesticides by over 85% as compared to traditional chemical lawn care and spray companies.

We do this through the use of our proprietary products that feed the soil and create a healthy environment for the lawn and soil organisms. Our IPM (Integrated Pest Management) system allows us to make better decisions regarding the use of control materials. Our dedication to using biological materials further reduces the amount of synthetic pesticides being introduced into the environment.

## **P**ractice Safety

Before using any pesticide, please read the label directions and follow the safety precautions. Remember, children do not know the difference between something pretty or something poisonous.



**PLEASE KEEP ALL  
PESTICIDES OUT  
OF THE REACH OF  
CHILDREN.**

# **B**iological Control & Biorational Control (derived from items in nature)

Controlling insect damage on lawns can be accomplished by using biological/biorational controls or synthetic pesticides. The preference would be to use a biological or biorational approach when the option is available.

Biological controls are “*living*” materials that can attack and limit damaging turf insects. Some examples of biological controls are Milky Spore (a bacteria), Nematodes, and Bt. (*Bacillus Thuringiensis* - a bacteria).

Biorational controls are non-living materials that are not man-made synthetic chemical pesticides. Biorationals can affect insects in one of three ways:

1. Deter them from feeding on the turf because they make the grass taste bad.
2. Prevent the insect from maturing by disrupting the “*molting*” phase.
3. Can outright kill the pest if ingested by some insects.



**Japanese Beetle Grub Larvae**

Some examples of biorational controls are NEEM (oil extract), pyrethrum (extract from chrysanthemums), and insecticidal soaps (derived from fatty acids).

# **S**ynthetic Controls (man-made)

Synthetic controls are those insect chemical controls that are man-made pesticides. Synthetic insect controls tend to have harmful effects on beneficial insects as well as turf damaging insects. If you use these materials, applications should be done sparingly and in affected areas only.

## **T**he Proper Choice

Whether one chooses to use a biological, biorational, or a synthetic material to control or reduce insect populations, it should be understood that all are considered pesticides. Any choice can be abused and the use of any material should be well thought out as to:

- Is there really a need for the material?
- What are the other options I have?
- Which will cause the least negative environmental impact, still control the pest, yet be cost effective?

NaturaLawn of America prefers bio-controls over synthetic pesticides and will continue to explore new products along this line. Bio-products generally:

- Tend to be more environmentally friendly by being “pest specific”.
- Do not last long and break down readily into the ecosystem.
- Are more expensive than synthetic insecticides.
- Are more difficult to incorporate into a lawn care system due to certain limitations in the way they must be applied and when they need to be applied to be effective.

While traditional lawn care companies attempt to make a case for using the synthetic types over the bio-controls, NaturaLawn® of America’s agronomic and operational philosophy mandates that...

...bio-controls take precedent over the synthetic controls whenever and wherever possible because, as stewards of the environment, we have a responsibility and accountability to ourselves and future generations.



## A Complete System

Integrated **P**est **M**anagement (IPM) - New or Old Idea?

The concept of pest management can trace its beginnings back to early agriculture and organic gardening. Today's IPM for lawn care is very new - in fact - so new that NaturaLawn of America was the pioneer for the lawn care industry and challenged the old tradition of "see and spray" pest control.

Integrated Pest Management (IPM) is a lawn care system that provides for reduced, better, and safer use of materials designed to control insects, weeds, and diseases. Successful programs are based on:

**\*Prevention**

**\*Monitoring**

**\*Control**

## P

revention Includes:

- Conserving the natural enemies of turf pests by selective use of biological and synthetic pesticides.
- Planting improved varieties of turf that have resistance to insect and disease attacks.
- Using good cultural practices (i.e. mowing, watering, aeration, and thatch removal).

## M

onitoring

By inspecting and monitoring your lawn and soil for problem pests throughout the growing year, information can be recorded and compared with:

- the weather conditions.
- the pest's behavior and stage of development.
- the lawn's history.

In a short period of time, you'll have good historical information about your lawn that will help you make better decisions regarding chemical use.

## **C**ontrol

Control includes using biological or chemical treatments only when necessary to prevent major lawn damage. This involves saving beneficial insects that may help destroy the pests that damage lawns.

Remember, the purpose of control materials is not to rid the lawn of all pests, but rather to hold damage to an acceptable level.

## **L**eading The Industry

The Federal Environmental Protection Agency (EPA) coordinated efforts to put together a book entitled "Integrated Pest Management for Turfgrass and Ornamentals". We are proud and honored to have been asked by the EPA coordinator to be the author of a chapter entitled "Implementation of an IPM Program Into a Lawn Care Operation".

## **S**afer & More Effective

There is no substitute for safety. You, your children, and pets are very important; and you can take great pride in giving your family the peace of mind that an organic-based IPM program brings you.



The application of disease controls should not be a normal part of a lawn care program. Disease activity on turf can be difficult to predict and fungicides are oftentimes unsuccessful and may be very environmentally damaging. Take the approach of educating yourself as to why a disease may occur and what cultural conditions can be performed to minimize disease activity.

## How & Why Does A Disease Occur?

The occurrence of a disease is shown in the diagram to the right. The triangle represented is a sturdy geometric structure supported by its three sides. When one side is removed, however, the structure easily collapses.

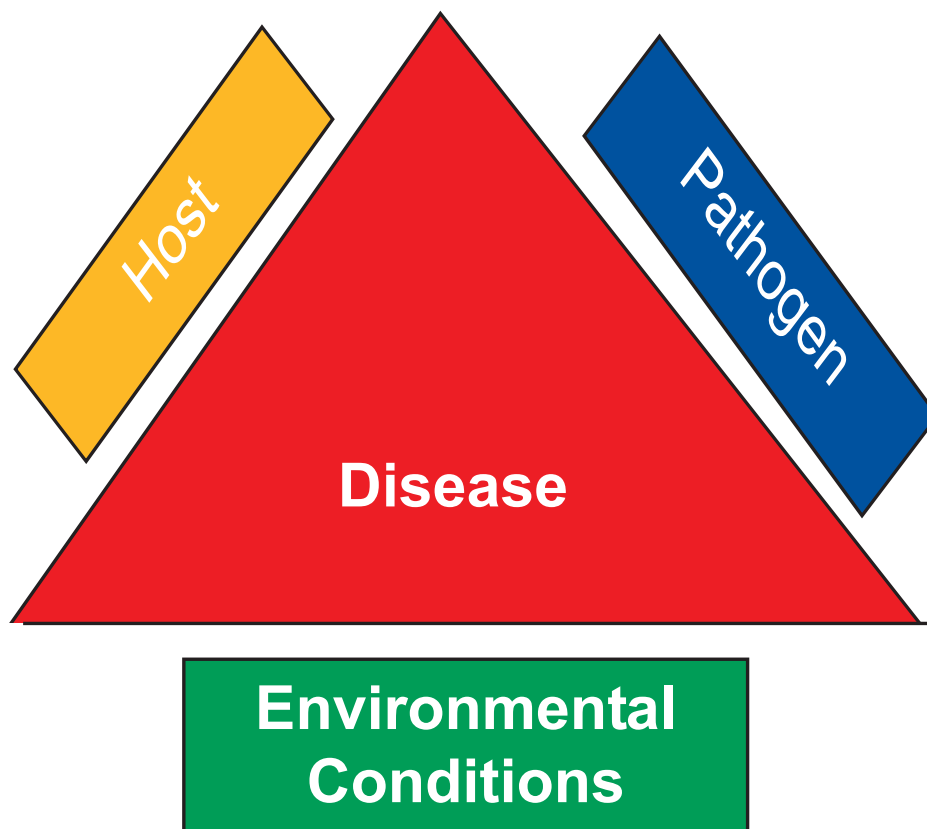
- The host is representative of all the turfgrasses found in lawns.
- Pathogens are all different fungal organisms that can attack turf.
- Where and when the environmental conditions are suitable for pathogen development, a disease outbreak will occur.

Good lawn care practices attempt to “manipulate” the environmental side of the triangle in various ways by:

- Changing the mowing height of the lawn by as little as  $\frac{1}{2}$ ” higher to strengthen the plant and help prevent diseases.
- Removing tree branches to allow more light or air movement into the turf area to help dry areas out.
- Rearranging drainage patterns to allow quicker drying, lower humidity, and more oxygen to the soil.
- Adding organic matter to the soil to aid in microbial activity which can deter harmful disease organisms.
- Applying lime or sulfur to the soil and thatch to adjust the pH and make it less attractive for disease activity.

## *Lawn Disease continued...*

**A**lso, by knowing which turfgrasses are susceptible to what diseases, you can alter the “host” side of the triangle as well. You can accomplish this by overseeding with newer and/or improved varieties of turfgrasses into diseased areas.



**B**y understanding how turf grows and recognizing the growing conditions best suited for the turf, you can minimize, and sometimes eliminate the need for any fungicidal pesticide applications.

# W

## eed Control

University and private research firms have shown year after year that proper mowing alone can control up to 80% of potential weed problems in your lawn.

Chemicals used to control weeds are only tools and should never be the sole method used to clear a lawn of these problems.

Remember:

**Mow at the proper height.** (3 - 4" for Tall Fescue and Fine Fescue; 3" for Kentucky Bluegrass and Ryegrass; 1<sup>1</sup>/<sub>2</sub> - 2" for Bermudagrass, Zoysiagrass; and 2<sup>1</sup>/<sub>2</sub> - 3" for St. Augustinegrass).

**Keep the blade(s) sharp.** Sharpen the cutter blade(s) at least once a month.

**Mow only if the lawn needs it** - not because it is Saturday!

**Mow in the cool part of the late afternoon/early evening** so the grass can recover better. (It's easier on you, too!)



By following the above points, you lose absolutely nothing but stand to gain many benefits. Try it - we know you'll be happy with the results.

## Natural Insect Resistance

When planting a new lawn or overseeding your existing one, if possible, select and use seed that has a naturally occurring fungus in it called endophyte, (pronounced end-o-fight).

This is one of many “good-guy” fungi that lives inside the plant. When insects such as chinch bugs, cutworms, and sod webworms chew on the grass, it tastes so bad that the insects move on! The result is no need for insecticides on the lawn. What a great way to have a positive impact on the environment.



**Chinch Bug**

These endophyte fungi are found in:



**Tall Fescue  
Seed Heads**



**Perennial Ryegrass  
Seed Heads**



**Fine Fescue  
Seed Heads**

Research efforts are underway to get endophytes into Bluegrasses, Bentgrasses, and warm season grasses such as Bermudgrass and Zoysiagrass.



In many ways, today's technology and scientific discoveries have launched us into an era of far better management and control of life and death than ever before. Yet there is still much we can learn from "the old ways."

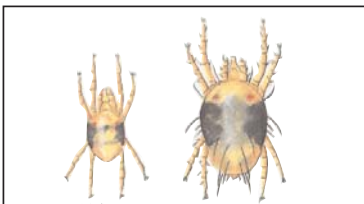
**Here are a few tips from Grandpa's attic:**

**Garden Pest Control - Yesterday's Ways**



◆ **To keep aphids off rose bushes** - use a food chopper to grind up shallots or green onions; mix them with an equal amount of water; strain the mix through cheese cloth and spray onto bushes.

◆ **To discourage chewing insects** - grind up several hot peppers; add equal amounts of water and a teaspoon of dishwashing detergent; spray onto plants.



◆ **To control spider mites** - mix one gallon of water,  $\frac{1}{3}$  cup flour and 4 teaspoons buttermilk; spray the plants. The mites will be enveloped by the spray and killed when it dries on the foliage.

*The World continued...*

<b><u>Plant These Herbs To</u></b>	<b><u>Keep Away These Pests</u></b>
◆ Catnip	Flea Beetle
◆ Henbit (weed in most lawns)	Insects in general
◆ Mint & Peppermint	Cabbage Moth
◆ Rosemary	Cabbage Moth, Bean Beetle, Japanese Beetle
◆ Sage	Cabbage Moth, Carrot Fly
◆ Summer Savory	Bean Beetle
◆ Tansy	Flying Insects, Striped Cucumber Beetle, Squash Bugs, Ants
◆ Thyme	Cabbage Worm



Henbit



Peppermint



Rosemary



Sage



Tansy

**Please Enjoy Your Lawn And Garden!**

*Compliments of...*



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