

Why Does New Turf Fail???

What is the number one reason for new turf to thin and then completely fail within a year?

Poor quality soil.

What is the number two reason for new turf to thin and then completely fail within a year?

Lack of planning for water draining from the roof and sidewalks, foot traffic from pets and people, for seed selection based on the amount of sun, enough compost to amend the entire turf area properly, etc.

What is the number three reason for new turf to thin and then completely fail within a year?

In addition to poor soil there is improper soil preparation. Tilling at least 6 inches deep and preferably 8-10 or even 12 is much better. Rake the lawn to a final grade is also critical especially for sodded lawns so that uneven pockets do not sink leaving roots dangling in empty air under the turf canopy where they will die. This is another reason to remove the old sod with a sod cutter rather than coarsely chopping up the old lawn and turning it into the soil.

REMEMBER: The bucket of a skid-steer loader is not the proper tool for creating the seed bed before seeding or sodding!

What is the number four reason for new turf to thin and then completely fail within a year?

Wrong date of seeding – August and September are the best seeding months. Other seeding dates are doable, but more attention and labor will be needed for success. SEE SEEDING FACTSHEET

What is the number five reason for new turf to thin and then completely fail within a year?

Poor choice of seed – No rye in shade, turf-type tall fescue with about 10% Kentucky bluegrass in sun, fine fescue best for dry shade, *Poa trivialis* for always wet, compacted shade. SEE SEEDING FACTSHEET

What is the number six reason for new turf to thin and then completely fail within a year?

No irrigation after seeding. Usually you will need to irrigate 2-4 times/day to keep the seedbed moist. If the new seedlings dry out even once, they will die because they do not have roots to fetch moisture deeper in the soil profile.

What is the number seven reason for new turf to thin and then completely fail within a year?

Failure to fertilize again when turf reaches about 2 inches in height at 4-6 weeks after sprouting. This follow up fertilization is REQUIRED for maximum establishment. At this point seedling turf is likely to run out of food and become very susceptible to damping off (SEE FACTSHEET ON DAMPING OFF) unless an application of 0.5-1 lb of actual nitrogen is made, in accordance with local and state fertilizer laws.

What is the number eight reason for new turf to thin and then completely fail within a year?

Bad mowing practices. You should mow as soon as the first few plants reach 3" and then weekly after that. Most wait too long to mow.

What is the number nine reason for new turf to thin and then completely fail within a year?

Crabgrass and bentgrass. Crabgrass will outcompete newly seeded areas especially in hot, dry areas. Make sure you have chosen the correct grass for the site and that there are no gaps in the turf into which the crabgrass can grow.

Bentgrass will outcompete other grasses in shade, wet areas and at the bottom of slopes. Bentgrass is also encouraged by close mowing, high fertilizer and frequent irrigation.

What is the number ten reason for new turf to thin and then completely fail within a year?

If the lawn was sodded, failure to core aerate can result in sod failure within six to seven months. Core aeration about 4 weeks after the sod is laid is recommended to permit roots to grow through aeration holes into the soil under the sod and the layer of soil the sod was brought in on plus it opens up channels for air and water exchange and prevents the disastrous formation of a perched water table.

What is the number eleven reason for new turf to thin and then completely fail within a year?

Failure to mulch after seed application---this helps to keep moisture and humidity around the germinating grass, promote seed to soil contact and also helps to keep seed in place and not wash away during irrigation or rain events.

Use about two bales/1000 square feet of straw mulch.

You can also lightly dust seed itself with soil to keep it in contact with the soil it is planted in.

What is an unexpected reason for new turf to thin and then completely fail within a year?

Failure to COVER the site once turf renovation is initiated because heavy rain can cause water movement off adjacent areas onto the turf site which typically carries and deposits silt and clay which in turn forms a seal on the soil surface that will be difficult for turf seed to root through or sod to root through, plus it will result in a lens of water on the surface that can act as a mini perched water table leading to algae, moss, and disease as well as encouraging run off of fertilizers and seed washing away. If this contamination by particles from off site happens, you need to dig up the surface again to re-establish soil air and water exchange and to get rid of the “crust” on top.

How do I know if my turf failed because of not enough sun?

You can use the following system to determine if light had something to do with failure. Remember that rye will not tolerate shade AT ALL. If your turf is in shade don't renovate until the shade issue is taken care of.

- Grade A = 8 or more hours
- Grade B = 6-8 hours
- Grade C = 4-6 hours
- Grade D = 2-4 hours
- Grade F = less than 2

How many directions should turf shed rainfall to insure good drainage?

Turf should shed rainfall in at least three directions.

When does surface drainage become a serious issue for establishing turf?

When the entire turf surface drains towards the front. This is the effect sharp sloping of a berm or hill has.

When the turf surface has water holding hollows.

When a large water shed in an adjacent rough area drains directly onto a turf surface: this is where you put your rain garden instead.

Why are there puddles in my new turf area?

Puddles are due to low vertical or horizontal movement of water. This is due to compaction, inadequate slope or the influence of the percent of organic matter and the soil type. The solution is to plow it up and renovate again or to core aerate.

My new turf is starting to thin. I am irrigating and fertilizing correctly and the turf gets enough sun. What do I do now?

Check the root zone by cutting out a piece of turf 3 inches wide by 4 inches deep. Now cut that piece in half vertically with a serrated steak or bread knife, trying to keep the two halves in their original shape. Signs of deep trouble in the root zone include:

- Layering in soil profile
- Inconsistent blending of soil amendments
- Uneven soil depth
- Black layer (this will smell of sulfur)
- Compaction (look for chunks of soil rather than sugary crumbles)
- Poor root development (short roots, discolored rather than white)
- Smell of sulfur when sample is broken apart

Why could using a skid steer or other heavy equipment to renovate cause problems? I save so much time using these, isn't it worth it in the long run? Won't the turf and soil recover if I baby them?

Heavy construction equipment moving across turf may cause loss of turf, severe soil compaction at a depth that cannot easily be remediated by normal core aeration, ruts in wet soils, and damage to underground drainage lines and irrigation pipe. Think of the equipment as glaciers: soil is still springing back in the North from compaction caused by the last ice age. Is it worth it? SEE SKIDSTEER FACT SHEET

My turf is failing in the area I spent the most time grading....where did I go wrong when I worked so hard to get it right?

Did you really need to grade? The goal is ensure adequate surface drainage of turfgrass areas so why would you grade if you don't need to? Grading can be a needless source of compaction.

What kind of grade should I have to my turf area?

The minimum grade should be 1-2% (2.4-4.8 inches drop in 20 feet) sloping AWAY from buildings.

AVOID grades of more than 25% (a drop of more than 25% or a drop of 1 foot in 4 feet) because the turf almost invariably fails, you can't mow it and especially on the south side will have drought and chinch bug issues.

I have heavy clay soil and added sand to lighten it and to improve drainage. Now the soil is like cement and hardly any grass is growing. What happened?

WARNING: adding small quantities of sand to a fine textured or clay soil can create a cement like mixture as per the Certified Turfgrass Professional Manual of Professional Lawn Care Association of America. Even soil from a remote site can cause this kind of incompatibility.

What is the ideal soil for turf?

Ideal for turf is 8-12 inches of sandy loam or loamy sand.

I added a 2 inch layer of what was sold to me as best quality top soil. I applied it to the surface of my new turf area and then rolled out sod. Now, two months later, bug patches of sod are dying off and the ground is very soft and squishy. What is going on?

Often a 1-2 inch layer of sand, organic matter or loam is added to existing soil in an effort to improve their turf BUT this practice RARELY succeeds and often results in a layering effect that reduces or prevents water and fertilizer movement into the soil and restricts turfgrass rooting. Water trapped this way is called a perched water table. It is best to simply amend what you have with compost to improve air and water exchange

What if I have to add soil? Is there any way to avoid layering?

IF you have to add soil mix at least 2 inches into subsoil to avoid layering.

I already added the soil layer and now everything is squishy when I water...if I step on the yellowing turf it slips back revealing the soaked mud underneath. What happened?

You have a perched water table. A perched water table is a water saturated soil or sand overlying a less permeable layer of soil. When water hits the less permeable layer it begins to back up like a bad toilet into the upper layer where the roots are. The turf roots sit in the water and die because they need oxygen but the water cannot drain. When the roots die, there is nothing to hold the turf in place so it slides off the surface.

My turf is thinning, and I can see what looks like a greenish black crust on the surface where it is thinned. Is this a disease?

Most likely it is algae, indicating that there is water standing on the surface due to compaction or a perched water table. There will also likely be pythium root and crown in the turf roots but this is a secondary infection due to unfavorable drainage.

My new seeding failed this past fall. I got it in late---could that be the problem?

It could be since the date of the first killing frost is extremely variable on Long Island. The rule of thumb is that the last good seeding date is 20-30 days before first expected killing frost. The ideal soil temperature for fall establishment is 73-76 F at a 4" depth.

I tried to get Zoysia established using the protocol for establishing typical grasses like Kentucky bluegrass but had no luck. Where did I go wrong?

Zoysia is a warm season grass so there are many differences in establishment and care. The optimal temperature for establishing zoysia is 70-95 so late spring, early summer are ideal. Do not try to establish in early spring because low temperatures inhibit growth and weeds will outcompete **sprigs** which are used to establish zoysia rather than seed. By the same token, no late season establishment because it won't get established before dormancy hits. You also may have under-sprigged the area if you had your timing right: you need 4-5 bushels of sprigs/1000 square feet.

I planted a lawn around a new building after grading it nicely and not only did it fail, parts of it completely sank and covered up the seed! What happened?

If you are working around new construction, resist the urge to GRADE and quickly seed or sod. The reason for this is that the soil must settle or be compacted after grading. Each foot of soil moved could settle up to two inches resulting in a rough lawn in a year or two. Settling of soil will bury seed too deeply to germinate.

I was forced to seed a SMALL lawn in late April and it failed because the weeds took over completely and the birds ate the rest. Is there ANYTHING I can do to get seed going at this time of year?

You can try seeding and then covering the area with cheesecloth which will rot away. The grass comes up through the holes but the broadleaf weeds will have more difficulty poking through. Or, you can cover small areas with spun polyester row cover to get the grass started earlier in the season.

Heat Stress on Turf

How does temperature affect cool season turfgrass?

The following temperatures are critical to cool season turfgrass:

90°F Shoot growth ceases.

77°F Root growth ceases.

70°F Maximum temperature for root growth of any consequence.

70°F Time to plant grasses in late summer.

60-75°F Optimum temperature for shoot growth.

50-65°F Optimum temperature for root growth.

40°F Shoot growth ceases.

33°F Root growth ceases.

20°F Low temperature kill possible if temperature subsequently drops rapidly below 20°F

So what is the most important thing to look at temperature wise for my turf in summer?

When soil temperatures reach 77-80 F in the crown region (first inch between blade and root), growth stops and then above 80, death begins to occur.

I don't have a soil thermometer. How does the soil temperature compare to other temperatures in the month of August, usually the toughest month for cool season grass growth?

If the street temperature is 100 F, the turf surface is 75

If it is 89 F three inches above irrigated green turf, the surface temperature is 88 F, and the night surface temp is 76 F.

If brown, dormant turf temperature three inches above the surface is 95 F, then it is 126 F at the surface, and 79 F at night at the surface.

If bare soil is 91 F three inches above the surface, it is 102 F at the surface, and the night temperature is 78 at the surface

If synthetic turf is 96 F three inches above the surface, it is 158 F at the surface, and 84 F at night at the surface.

Does compacted soil make heat stress worse?

Yes. Water is trapped in compacted soil and has difficulty moving to the surface where it can evaporate and reduce the soil's temperature. Thus trapped soil water can heat up more in compacted soil and begin to cook the turf's roots under the surface.

Can I do anything to reduce heat stress?

Yes. If temperatures are 95 F or higher, or if there is high wind for more than half of the day, set the sprinkler system to go off multiple times between the hours of 11 AM and 2 PM to provide only a light sprinkling in addition to regularly scheduled watering.

These light sprinkles are designed to cool off the crown of the grass by evaporation in order to prevent "heatstroke" in the turf, which really means keeping the crown cool so no permanent damage occurs. Permanent damage means weed invasion, especially by late season crabgrass!

My customer insists on light, frequent irrigation. Does this make the heat stress worse?

Yes. If the turf was on a regimen of light frequent irrigation before heat stress hit then that means remaining functional roots are very short.

Once heat stress hits, the few roots that remain alive in the shallow moist zone created by light frequent irrigation then have to work twice as hard to take up enough water to supply the plant with water for growth and activity PLUS water to cool the plant off.

If the remaining roots cannot keep up, then heat damage will occur and the plant may die. This creates thin turf which means no shading of the soil and even hotter conditions.

Can you give me a concrete example of how soil temperature could have impacted my turfgrass in the last couple of years?

If we look at the soil temperatures at a two inch depth below turf in 2009, there were 57 days where the temp was 77 or exceeded 77. If we look at that as a percentage of the whole year, 365 days, that is 15% of the year. If we look at that as a percentage of the whole growing season March through November, 270 days, that is 21% of the whole growing season. If we look at it as a percentage of the season that visual complaints are made, May through September, or 154 days, then that is 37% of the "summer" season. This does not even take into account the days where root growth was not of any consequence because soil temperatures were between 70 and 77 F.

In 2010 out of 365 days, 73 days were or exceeded 77 degrees at a two inch depth, or 20% of the year. If we look at that as the whole growing season, 270 days, that shakes out to 27% or over a quarter of the entire growing season.

If we look at the 73 days out of the 154 days between May 1 and September 30, we are looking at 47% of the time leading to death and disrepair.

Is there anything I can do to help my grass recover from an episode of heat stress?

You could try kelp based amendments. Continue to keep mowing height at three inches. Overseed with tall fescue enhanced with endophytes. Tall fescue is the most heat tolerant of all cool season turfgrasses.

Planting Specs for Near Buildings, In Beds, Medians and Islands

How far away should a large tree (60 feet high) be from a building?

Thirty five feet away.

How large should a bed or median area be to allow for a large tree's root system, trunk diameter and root flare?

A bed or median area should be *greater than 8 feet wide* to accommodate a large tree.

How large an area do medium trees (30-40 feet high) need for proper growth?

Medium trees need an area *4-8 feet wide* or a *planting bed 8 feet square* or larger.

How large an area do low trees or shrubs (20 feet high or less) need for proper growth?

Low trees and shrubs can handle narrow planting areas of 4 feet or less, containers, or areas surrounded by concrete.

How far away should a conifer windbreak be from a building and which side(s) should they be located on.

The windbreak should be 50 feet from buildings on the north or west side.

Where should deciduous trees be situated for cooling in summer and sunshine in winter?

The south or west side.

What is the minimum amount of topsoil trees need for growth?

The minimum amount of topsoil is 6 inches but 10-15 inches are better.

What is the minimum amount of topsoil I need to get acceptable turf growth?

MORE than 6" of root utilizable topsoil.

Chinch Bugs

What is a chinch bug?

It is a tiny pest of turf. It has a triangular head and bright red eyes. There is a black and white pattern on the back of the adult that looks like an X. The adult is about the size of a sesame seed (1/5th of an inch long).

How do they feed?

They have a mouth part like a straw. They suck sap from the grass plants.

What does chinch bug damage look like?

Expanding, irregular patches of dead or stunted grass surrounded by a halo of yellowing, dying grass often provide the first clue to the presence of chinch bugs. Grass turns yellow to red-brown, and looks drought stressed but water doesn't help.

Chinch bug saliva is toxic.

Any other indicators of a possible chinch bug outbreak?

Lots of starlings feeding on turf are a good indicator of chinch bug presence

Is chinch bug damage fast or slow?

Damage can develop rapidly, especially in sunny locations during hot, dry weather

Are chinch bugs active in winter?

Adult chinch bugs are inactive during the winter. Reproduction begins after the appearance of warm weather in the spring.

What do chinch bug young look like?

They look like tiny bright orange and white candy corn.

How can I find out if I have chinch bugs?

There are several ways, all effective.

- Part the grass on the margin of where the grass is damaged and is still green and inspect the leaf litter for the presence of the larvae and adults
- Take a one pound coffee can that has had both ends removed and pound it about an inch into ground between the margin of the area that is damaged and that which is still green. Fill the can with a solution of one gallon of water with one

ounce of lemon dish detergent mixed into it. If the can drains fill it again and wait 10 minutes or so for chinch bugs to float to the top.

- Use a watering can to apply the water and detergent solution listed above to the margin between damaged grass and green grass in a two square foot area and then lay a sheet of white flannel on top of the area you watered. Wait 10 minutes or so, then peel back the flannel and look for chinch bugs clinging to the underside of the cloth.

When should I start to look for chinch bugs?

Start to sample at 115 GDD (growing degree days) and again at 850 GDD.

What grasses do chinch bugs prefer?

They like them all. Often the greatest numbers of chinch bugs will occur in weedy lawns with lots of bents, fescues and thatch.

Are there locations in the turf that are favored by chinch bugs?

Full sun and South, East and Western slopes or faces favored

When will I begin to see damage?

You are most likely to see damage in June with droughty conditions

Where do chinch bugs overwinter?

Chinch bugs may overwinter in tall grasses near lawn, so check out ornamental grasses or native plantings for the presence of chinch bugs as well.

When should I treat chinch bugs?

Target overwintered adults in *early* spring before they lay eggs. Adults emerge at 44.6 F, feed and mate 2 weeks prior to oviposition. Therefore treat adult chinch bugs in April and May before egg-laying occurs in mid-May.

A second, traditional window for insecticidal control is mid-summer, or just prior to sumac bloom but the optimal time is after overwintered adults have stopped laying eggs and before the nymphs from their earliest eggs have matured to adults. Time this to match GDD 750-950. Forget it once we are past 950 GDD.

The best option is to overseed with endophyte enhanced grasses in the fall. Endophyte enhanced grasses have a fungus that grows within the grass plant and can reduce and then eliminate chinch bug feeding after several consecutive overseedings. Ryes and fescues can be purchased with endophytes.

Are there other tips for chinch bug treatment?

Water in only lightly to prevent pushing the material beyond the upper thatch layer where the chinch bugs are located. Before any chemical treatment, turf should be watered with 15-20 gallons water per 1000 sq. ft. Granular materials should be watered in after application BUT NOT WITH TOO MUCH WATER. Try 0.25" water after app, which means Area times depth=volume: you know depth, you know area, that gives you volume

Where should I focus my control efforts?

Focus on areas where you always have outbreaks for any control programs and use products that will remain in the thatch.

What is the threshold for treating chinch bugs?

The threshold is 15-20 chinch bugs/square foot. More than 20 floaters/coffee can means that action should be taken to avoid loss of turf. Visual Thresholds: more than 10 individuals found in a 60-second search of 1 sq. ft and 20-30 per sq. ft. in a detailed search.

Why would chinch bugs show up in different places each year?

Heat accumulation can change from year to year, with extra heat meaning a greater chance for chinch bug problems. Heat accumulation can result from sand top dressing, pavement edging, loss of shade from tree or shrub removal, dethatching, pavement changes, reduced mowing height and different equipment which throws off more heat.

What About Turf Seeding?

What are the major kinds of cool season turfgrasses I can select from?

You can select from the following:

Kentucky bluegrass: Wear tolerant, recuperates well, excellent traction, cold tolerant, slow to establish so should wait a minimum of 180 days for intensive use, most are sun only. Can have major disease issues.

If you use an 80% Kentucky bluegrass 20% rye mix, you can have intensive use in 90 days.

Perennial Rye: Good wear tolerance, tough root system, compaction tolerant, can be enhanced with endophytes for disease and surface insect resistance, best choice for overseeding worn or diseased areas due to rapid germination and fill in, sun only.

Fine fescue: Cannot take foot traffic, best choice for dry shade, tolerates acid soil, does not tolerate high fertilizer and wants only half the normal rate of fertilization, extremely drought tolerant (excess irrigation thins fine fescue) can be enhanced with endophytes for disease and surface insect resistance, tight growth habit helps to exclude weeds, best choice for infrequent mowing, may take on bronze color in full sun.

Types of Fine Fescue:

Creeping red fescue: dense turf, with weak rhizomes

Strong creeping red fescue: less dense turf, better rhizomes, spreads well

Chewings fescue: no rhizomes, very dense, not as temperature extreme tolerant but considered the most attractive of the fine fescues

Hard fescue: no rhizomes, better disease and drought resistance than creeping fescue, slow growing and well adapted to shade and poor soils

Sheep fescue: used for soil stabilization, makes a clumpy turf; very drought tolerant and does well on gravelly or sandy soil; does not need to be fertilized

Tall fescue: Best grass for Long Island, deep fibrous root system, excellent drought tolerance once established, include 5-10% Kentucky bluegrass in tall fescue mix for fill in of divots, disease tolerant unless overwatered, moderate shade tolerance, can be endophyte enhanced for disease and surface insect resistance, grub resistant.

Poa trivialis: Very shade tolerant grass for chronically wet sites only. Has a very shallow root system so will only work in moist areas. The least heat tolerant and wear resistant of cool season grasses.

What kinds of grasses should I select for my site?

First look at the way the grass spreads:

- Rhizomatous: spreads laterally BELOW ground, fills in well: Kentucky bluegrass
- Stolons: spreads laterally ABOVE ground, undesirable bentgrass or possibly desirable *Poa trivialis*
- Bunch: Does NOT spread laterally, therefore must have tight overseeding, reseed damage immediately: perennial rye, tall fescue, fine fescue

The rule is to always have about 10% bluegrass in the mix in full sun to help fill in any holes that develop in the lawn.

Rye and most Kentucky bluegrass cannot tolerate shade at all.

But what about seed mixes? I am still confused on the correct percentage of each kind of grass for my set of conditions and what the rules are on the amount of seed to put down.

The seeding rate rules in lbs/1000 square feet are roughly as follows:

- KENTUCKY BLUEGRASS: 2 lbs/1000
- POA TRIVIALIS: 1-2lbs/1000
- FINE FESCUES: 5 lbs/1000
 - Chewings: 3.5-5
 - Hard: 3-4.5
 - Meadow: 7-10
 - Red: 3.5-5
 - Sheep: 3-4.5
- TALL FESCUE: 8-12 lbs/1000
- PERENNIAL RYE: 7-10lbs/1000
- KENTUCKY BLUEGRASS/PERENNIAL RYEGRASS mix in percent by weight: 80-20 to 90-10: 2-4lbs/1000
- KENTUCKY BLUEGRASS/TALL FESCUE mix: 10-90 to 20-80: 7-10lbs/1000
- KENTUCKY BLUEGRASS/FINE FESCE mix: 30-70 to 50-50: 2-5 lbs/1000
- KENTUCKY BLUEGRASS/PERENNIAL RYEGRASS/FINE FESCUE mix: 45-5-50 to 60-10-30: 3-5 lbs/1000

What are some typical mixes or blends for specific conditions that I might find?

Sunny, medium to high maintenance:

65% KENTUCKY BLUEGRASS, several different varieties

15% PERENNIAL RYEGRASS

20% FINE FESCUES

Seed at 3-4 lbs/10000

Sunny, low maintenance

65% FINE FESCUE blend
15% PERENNIAL RYEGRASS
20% KENTUCKY BLUEGRASS
Seed at 4-5 lbs/10000

OR
100% TALL FESCUE blend
Seed at 7-10 lbs/1000

Shady, dry areas
100% FINE FESCUE blend
Or shade tolerant TALL FESCUE

Shady, wet areas
100% POA TRIVIALIS

Could I blend my own seed mix?

Absolutely. Follow the guidelines below for percent by weight of mix. Use the following formula to calculate percent by weight of mix:

To get the number of pounds of a particular grass you want in a mix: Take the percent of seed suggested with decimal placed in front multiplied by the number of pounds total seed mix you want.

So, for example, you want to make 25 pounds of seed mix total. You want 10% Kentucky bluegrass. $0.10 \text{ bluegrass} \times 25 \text{ pounds} = 2.5 \text{ pounds of bluegrass in your 25 pound mix.}$

Suggested percent by weight of mix for various blends:

KENTUCKY BLUEGRASS shade 10%, sun 55%
Fine fescue dry shade 65%, sun 25%
PERENNIAL RYEGRASS shade 15%?, sun 20%

Seed rate in lbs of mix like above:
Shade 5-6 lbs/1000, sun 3.5-4 lbs

What are some recommended varieties of cool season turfgrass?

You can check the National Turfgrass Evaluation Program, ntep.org, to find out varieties that have performed well in our climate. Use data generated at Rutgers University in New Jersey because their climate is closer to Long Island's than upstate New York. New varieties that have done well are as follows:

Tall fescue: Bonanza, Phoenix, Taurus, Rebell II, Finelawn
Kentucky bluegrass: Bristol, A-34, Ram I, Chateau, Kenblue, Midnight, Georgetown
Fine fescue: Aurora, Scaldis, Spartan, Reliant, Valda Waldina, Spartan
Perennial rye: Allaire, Pennant, Patriot II; Palmer

What is the one thing I should do before I purchase seed? How can I tell if the seed mix I want to purchase is a good value for my money?

You need to calculate pure live seed BEFORE you purchase the seed product. Never purchase grass without a seed label.

A pound of seed will never have 100% germination.

A pound of seed is never 100% grass---there are always contaminants.

The amount of *grass* seed that WILL germinate in a pound is known as pure live seed.

In order to calculate pure live seed, you need the percent purity and percent germination from the seed label.

For each seed component of the mix, multiply percent purity and percent germination together as decimals, add them up and convert back to percent
 That is how much of the pound will potentially germinate

EXAMPLE:

| | |
|--|---------------------------|
| Midnight KENTUCKY BLUEGRASS | 0.195 X 0.95=0.185 |
| Percent purity 19.5%, percent germination 95% | |
| Serene KENTUCKY BLUEGRASS | 0.295 X 0.95=0.280 |
| Percent purity 29.5%, percent germination 95% | |
| Manhattan PERENNIAL RYEGRASS | 0.2925 X 0.95=0.278 |
| Percent purity 29.25%, percent germination 95% | |
| Creeping RED FESCUE | 0.195 X 0.8= <u>0.156</u> |
| Percent purity 19.5%, percent germination 80% | |
| <hr/> | |
| | <u>0.899</u> |

This means 89.9 % pure live seed in a pound of this mix.

How do you tell if this is good enough? Find the recommended overseeding rate. In this example it is 5 pounds. How much of that 5 pounds will germinate?

5lbs from the bag X 0.899= 4.495 pounds that will actually germinate.
 You will need to compensate for that half pound of junk.

So your actual seeding rate is 5.5 pounds to account for the half pound that will not germinate, more or less.

What are endophytes?

Endophytes are fungi that are inside grass seeds and then grow in the grass plant leaves once the seed sprouts. They can deter chinchbugs and sod webworms completely with repeated overseeding, and they reduce disease and enhance drought tolerance. Grass seeds can be purchased with endophytes but the seed must be kept cool and even then the endophyte enhanced seed only has a shelf life of about 1 year, so plant it as soon as you can.

Rye, tall fescue and fine fescue can all be purchased with endophytes but Kentucky bluegrass cannot.

Endophyte enhanced grasses should not be used where livestock may graze.

What is the best grass for most Long Island sites?

Tall fescue. Its massive root system makes it tolerant to grub feeding and to drought.

If I have decent grass seed, is there anything else I need to do before I begin the recommended renovation process?

Yes. Evaluate the site for light because all grass needs light to exist. Even shade tolerant varieties will have to be renovated every five years or so. Morning light is better. If your turf is in shade don't renovate until the shade issue is taken care of.

- Grade A = 8 or more hours
- Grade B = 6-8 hours
- Grade C = 4-6 hours
- Grade D = 2-4 hours
- Grade F = less than 2

If I have shade, what grasses should I use?

If you have less than 70% shade, try:

Kentucky bluegrass Birka, Touchdown, Bristol, Glade, Nugget, Eclipse, Bensun...but these varieties do better the more light they get

Tall fescues: Rebel II, Falcon, Mustang, Arid, Jaguar, Cimarron, Bonanza

Fine fescue: Bighorn sheep fescue, hard fescues Biljart and Reliant, Chewings fescue Jamestown and Banner, creeping fescue Fortress, Ruby, Ensylva

At what point of shade is it pointless to try to grow turf?

If shade above 85% you can't grow turf. If shade is 70-85%, you will be limited to moisture loving *Poa trivialis*.

With the new nitrogen and phosphorous laws, I am trying to cut back on lawn fertilization. What are the annual average actual nitrogen requirements/year for cool season turfgrasses?

In most cases, the requirements for consistent turf quality are as follows. For those grasses requiring less than 3 pounds of actual nitrogen the figure is for established turf. Newly seeded turf may require a little more to get started properly.

KENTUCKY BLUEGRASS: 3lbs actual nitrogen
PERENNIAL RYEGRASS: 2 lbs actual nitrogen
TALL FESCUE: 2 lbs actual nitrogen
FINE FESCUE: 1 lb actual nitrogen

What are the optimum temperatures for seed germination?

Kentucky bluegrass 59-86
Rough bluegrass 68-86
Tall fescue 68-86
Red fescue 59-77
Sheep fescue 59-77
Chewings fescue 69-77
Perennial ryegrass 68-86
Creeping bentgrass 59-86 (this grass is desirable for golf courses only)
Annual bluegrass 68-86 (this grass is desirable for golf courses only)

Is there one thing I can do to speed up germination?

YES. FREEZE SEED FOR 48 HOURS BEFORE PLANTING. This cracks the seed coat and speeds germination by one half to one third. Kentucky bluegrass will sprout much more quickly if you use this tip.

Does the seed mix ratio make a difference in seasons following the initial planting year?

Absolutely. Ryegrass is very, very aggressive compared to slow start bluegrass. Plant less than 10% perennial ryegrass by weight in a mix if you want a bluegrass lawn.

% Kentucky bluegrass:perennial rye
by weight in
original seed mix

% Kentucky bluegrass
in stand 2 years
after seeding

| | |
|-------|----|
| 95:5 | 73 |
| 85:15 | 59 |
| 75:25 | 50 |
| 65:35 | 44 |
| 50:50 | 35 |
| 25:75 | 21 |

Can fertilization composition at establishment influence types of grass in future seasons?

Absolutely. If you have a mix of Kentucky bluegrass and rye and turf receives heavy N shortly after rye germinates, rye will take over the stand because Kentucky bluegrass is slower and can't compete. This is also related to percent of rye originally in the seed mix.

A mix of Kentucky bluegrass and fescues given high N causes Kentucky bluegrass to dominate. Give the mix low N, fescues dominate.

Can fertilizer composition used the year after establishment affect turf growth?

Yes. The year after seeding when using a regular fertilizer, the proportion of N (Nitrogen) to P (phosphorous) to K (potassium) affects the amount of grass growth. You may be able to manipulate ratios to get better results. We will see more no phosphorous fertilizer combinations due to new laws. If you have a no phosphorous, low nitrogen formulation, make sure K is also very low or else you will have less turf growth. No P with moderate to high nitrogen levels: K level does not matter as much. No P with very high N, you'll get more growth with more K.

How late can I seed?

Fast germinating rye seeded by October 1 provides about about 60% cover by December first.

A dormant seeding of Kentucky bluegrass on December 1 outperformed spring seedings on the first of April and May and actually did almost as well as a September 1 seeding.

FREEZE YOUR SEED for 48 hours before applying.

What about late, LATE seeding?

The trick for late, late seeding is to seed into a prepared soil after SOIL temperatures have cooled below 40 so seed will NOT germinate until the following year. So start seeding between Thanksgiving and Christmas. The advantage of late, late seeding is greatest when seeding slow germinating grass like Kentucky bluegrass. Avoid seeding KENTUCKY BLUEGRASS on any area prone to even mild erosion

FOR DORMANT SEEDING SEE SEPARATE TOPIC

THATCH

What is thatch?

Thatch is a build up of dead and dying roots that is being manufactured more quickly than it can be broken down.

Where does thatch begin?

Just about one quarter inch below the swollen base of the turf grass blades.

How much thatch is too much thatch?

More than one half inch is too much. Less than that is fine because it acts like a carpet pad---a cushion for the crown of the turf grass plants.

Why would I have a build up of thatch?

An acid pH prevents microbes from working effectively to break down the thatch layer. The first thing you should check when you have a thatch build up is the pH.

What is the best way to combat thatch?

Core aerate the turf because this brings soil microbes into contact with the thatch layer and pokes holes in the thatch for more efficient air and moisture exchange which also helps microbes to do their work of breaking down thatch.

Shouldn't I dethatch with a dethatching machine?

NO! It rips up the turf root system which looks like you are doing a great job but in reality you are stressing the turf and bringing weed seeds like crabgrass and annual bluegrass to the surface, especially in the spring. When you dethatch in spring you are ripping up the root system just before the grass goes into its most stressful season.

If you must use the machine, and we wish you would not, the fall is a better time. Try core aeration and changing the pH instead of a dethatching machine.

Will raking dethatch the turf?

No, but it will not usually harm it either. When you rake you are mostly pulling out dead grass leaves rather than roots or thatch.

Dealing with Dog Urine on Turfgrass

Is there any difference in dog urine spots with different sized dogs or different amounts of dog urine?

Small amounts of dog urine produce a green-up or fertilizer effect while large amounts produce a burn or a dead patch.

Will burned spots recover?

Yes, burn spots will recover over time.

Is there a difference in damage by male or female dogs?

Yes. Urine marking of territory means that the dog (usually male) uses many small volume urinations on marking posts. Young trees and shrubs may be overloaded with nitrogen with repeated marking and may actually die. Female dogs are more of a concern for lawn areas because they release all their urine at once, leaving a brown spot with a green ring

How do I tell the difference between a disease spot and dog urine?

Look for the bright green ring surrounding a brown spot if it is urine damage. A bright green ring will not be present for any fungus except for fairy ring, and the fairy rings are usually not surrounding a brown spot.

Are there other issues that leave a bright green ring?

Fairy ring fungi may produce a huge bright green ring or arc. Birds such as geese may cause small oblong green rings with their waste products on turf.

Is there a period when lawns are most susceptible to dog urine injury?

Yes. Lawns are most susceptible when they have had the maximum amount of fertilizer already applied, particularly if it was rapid release, high salts fertilizer.

Which grasses are most susceptible to dog urine burns?

Kentucky bluegrass is the most susceptible to burn from dog urine with fine fescue and PRG being far more resistant.

What are the best repellents to keep dogs off of turf areas?

Hot or bitter products are most likely to repel dogs by odor or taste; odor repellents may actually encourage a dog to mark by virtue of a strange smell.

Are there any other ways to keep dogs off of turf areas?

Motion activated sprinklers may help to discourage dogs as well as geese, cats or rabbits

What is the best way to minimize turf burning by dog urine?

Watering anytime up to eight hours after urination diluted the effects to a simple fertilization. Delay watering in for 12 hours or more and you will see progressively worse burns, so confine dog walkers to areas with irrigation. Even with irrigation you'll still get some burns but not anywhere as severe as with no watering in.

Dealing with Ruts in Turf

Some trucks left very deep ruts in the turf. Should I fill them in with soil from another job, tamp them down and reseed?

No! DO NOT TAMP!!!! Loosen existing soil.

SHALLOW RUTS:

Shallow ruts a few inches deep (less than 4") can be loosened with a spading fork. Push fork into the ground perpendicular to the rut at a 45-degree angle. Push down gently on handle and slowly hoist sod back up to a new high of 1 or 2 inches ABOVE the surrounding area. Remove the fork and move down the rut, repeating. Let the sod settle over time to a level that's even with the neighboring lawn.

DEEP RUTS:

Ruts more than 4 inches: use a lawn edger or a spade to make a lengthwise cut through the grass at the bottom of the rut, then use a goose necked sod lifter fork to fold back the sod on each side of the cut.

Loosen the soil in the rut, leave an inch or two higher than undisturbed soil.

Add more soil from stockpiled cores if necessary.

Fip back the flaps of "grass sandwich", roll lightly, and water well.

Are there any other tips on fixing ruts that I should keep in mind?

Proceed carefully if you have an underground irrigation system and you are digging or poking.

150' is about 30 minutes work

Even if some damage persists, grass will grow back as a good match for what was there, instead of a different color, density, and texture.

Damping Off

What is damping off?

Damping off is the death of seedling turf caused by fungus before or just after it has sprouted.

How does damping off occur?

Pre-emergence damping off occurs prior to the new plant breaking through the soil, i.e., the seed actually rots. This is favored by poor seed bed preparation (the soil should be fine and firm), a seed bed that is too wet, a common problem, and seed that is planted too deep.

The second form occurs when the stem and roots form, but the plant is girdled at the soil line. The seedlings yellow, the plants become floppy and the whole stand of new grass collapses and dies, often with a bunch of fungal threads visible in the canopy. This is typical damping off, seen more often than pre-emergence damping off. It is favored by a poor seed bed, or one that is too wet, where seeds are planted too deep (never more than 1/8 of an inch), where too much fertilizer has been applied and most importantly, **TOO MUCH SEED!!!** When you think you'll do yourself a favor and spread seed thickly you set the seed up for high competition for light, which leads to spindly plants with thin cuticles, you increase the humidity which leads to rot as well as extreme competition for water and nutrients. All of this leads to weak grass which means that the opportunistic diseases are going to move in.

Do the fungi that cause damping off stick around to bother turf in successive seasons?

Yes. Typical damping off organisms are the same ones that produce disease in mature turf, e.g., Pythium, Fusarium, and Rhizoctonia.

What can I do to prevent damping off?

The most important thing is proper seed bed preparation. See the sheets on lawn renovation and seeding.

Freeze seed before planting for 24-48 hours to crack the seed coat and speed germination. This really gives an advantage fungus induced pre-emergence damping off in cool soils.

Fertilize with a half pound of actual nitrogen/1000 square feet in the form of starter fertilizer about 4-6 weeks after establishment.

Water in the morning and early afternoon to allow soil to dry as best you can before nightfall

Mowing as soon as seedlings reach a mowable height will tend to keep the canopy drier and less humid, which is less conducive to damping off.

Purchase seeds coated with fungicides. These normally add about 7-10 cents/pound to the cost and will protect against infection at a very critical time.

Treat seedbeds or newly emerged seedlings prior to the onset of warm wet weather with fungicide to avoid Pythium damping off and/or Pythium blight. One problem is allowing the seedbed to dry in order to support foot, spreader, and/or sprayer traffic. Small sprayers will likely be necessary

How quickly can damping off take down seedling turf?

Virtually overnight.

Overseeding and Dormant Seeding

What is the difference between dormant seeding and overseeding?

Dormant seeding is done when established turf is dormant during cold temperatures, usually between December and Mid-March. Overseeding can be done at any time during the year while the grass is actively growing.

What is the best program for overseeding an area prone to severe annual wear?

If an area is prone to severe annual wear, and is in full sun, seed with blend of 2-3 PERENNIAL RYE varieties at a rate of 4-5 lbs/1000ftsq. For high use athletic fields, use 10-15 lbs/1000 sq. ft. for maximizing traffic tolerance and quick cover with perennial rye or tall fescue.

If there is light to moderate wear, use a mix of KENTUCKY BLUE GRASS and PERENNIAL RYEGRASS.

Cut the grass a little shorter than you normally would, core aerate in 4 directions, apply starter fertilizer at a rate of one pound of actual nitrogen/1000 square feet, and drag the cores back in using an upside down Astroturf mat, chain link fence piece, or drag mat attached to a riding mower. Sew seed by half lots in opposite directions. Seed should never be buried more than one eighth of an inch deep. Most herbicides should NOT be applied until new areas have been mowed twice.

I have a really large area that is damaged and has frequent foot traffic. Can it continue to be used after I have overseeded it?

If you have bare areas greater than 2 feet in diameter, overseed by all means, BUT no use for two mowings, which is about 4-6 weeks with irrigation, and 3-4 months without.

I have an area that is heavily used all autumn. When is the best time to repair this turf?

Fall use areas are BEST repaired at the end of the season even if you need to use dormant seeding methods in order to avoid weed pressure during spring repairs.

I know I need to begin overseeding but are there certain tips each season that can help me have better success?

Summer overseeding often FAILS unless you have access to huge amounts of irrigation and because of pressure from summer annual grassy weeds like crabgrass.

If an area is prone to erosion from wind or winter don't dormant seed.

If you are dormant spot seeding, scratch up spots with a rake for better seed to soil contact.

When I overseed, I never see the Kentucky bluegrass in my seed mix sprouting or growing. What is going on?

KBG is a very weak competitor when seeded with or into *overseeding* mixes. Kentucky bluegrass must be 20% by weight of a mix to be a significant player in that turf stand when you are overseeding.

If you are mixing in more than 20% perennial ryegrass when you overseed and you want Kentucky bluegrass, you need to mow rye down to 0.5" the first few weeks after establishment so the Kentucky bluegrass can come through

What is honeycomb seeding?

Honeycomb seeding refers to seeding for several consecutive days from mid- February through late March. These days should have freezing temperatures in the evening and thawing temperatures in the daytime so that the alternate freezing and thawing help to embed the seed into the soil. Honeycomb seed should be put out early in the morning when soil is still frozen but expected to thaw by mid-day. If you expect to honey comb seed, scratch up the soil the previous fall.

When is the best time to do a late winter/early spring dormant seeding?

Put your seed out at the end of a rain or snow storm as the snow melts. As the moisture dries down it will pull the seed into contact with the soil. Time this seeding with an acceptable temperature for dormant germination. Kentucky bluegrass will germinate when soil temperatures are below 35. Rye needs soil temperatures of at least 45, and tall fescue needs temperatures of at least 55 or better.

When is the worst time to dormant seed?

Early winter is not as good because germination is reduced by seed rot.

With the county fertilizer laws prohibiting fertilization between November 1 and April 1, when should I fertilize my dormant seeded turf?

For dormant seeding, fertilize pre-plant in you are not in the blackout window listed above, THEN at emergence in spring if you are not in the blackout window, 4-6 weeks later, 8-10 weeks, then 12-14 weeks later. If you are in the black out window, time your starter fertilizer in SPRING shortly after April 1 when you can see dormant seedling sprouts, then again around Memorial Day and finally Labor Day.

Will I need to irrigate my dormant seedlings in spring?

Only if we are having a dry, warm spring. Then you may need to start light frequent irrigation as soon as soil temperatures are above 55 for dormant seeded areas, continue until seedlings are 1.5 inches tall.

I have lots of leftover rye...can I dormant seed with it?

Dormant seeding with perennial rye is not the best choice because it is more likely to suffer cold injury.

How much seed should I use when I dormant seed?

Use 50% more seed when you dormant seed due to losses from rot, cold or bird predation

SOD WEBWORMS

What are the small tan moths that fly up out of the turf during July and August?

They are sod webworm moths.

What kind of damage do they do?

The adults do no damage but the young, caterpillars that feed at the base of grass blades, leaving green “worms” of grass growth typical of sod web worm damage, like two legged jelly fish while cutworm marks are more like an elongate S. Damage is easily mistaken for disease or drought damage.

What do the caterpillars look like?

They are less than an inch with black dots.

How do I know if I have the caterpillars?

Use a solution of one gallon of water with one ounce of lemon dish soap applied to the margin of the area that is damaged and still okay. Mark the area and come back twenty minutes later. Look for the caterpillars on the surface.

Pre-irrigate when soil is dry prior to using a soap solution for monitoring

Alternatively, look for small green pellets in the area where damage has occurred. If the pellets are brown, the sod webworms are gone. Green means they are still around. If the nipped grass ends are still green, it means the sod webworms have recently dined (previous night) but if darkened, dined there longer ago

What is the threshold for damage by sod web worms?

Damage will NEVER be severe enough to warrant treatment if sod web worms are in shade!

When am I most likely to see sod webworm damage?

Damage is most often seen mid to late summer, get small brown patches of closely cropped leaves that resembles disease.

What are some tips for treatment of sod web worms?

Caterpillars are active at night, so delay putting your treatment out until early evening. After treatment watering should be limited to a 0.25” depth. Calculate how much you need by using the formula: Area times depth = volume

When you see adults, it's too late to treat.

Avoid mowing 1-2 days after application

LEAVE ANTS ALONE!!!! 90% of sod webworm eggs will be eaten by ants!!!

What are some monitoring tips for sod webworms?

Damage attributed to sod webworm on residential lawns is often just drought.

Scout for larvae two weeks after adults are spotted.

Sod webworms are more common on newly established lawns or those with lots of bentgrass and Kentucky bluegrass

If you see birds picking at turf in early spring sod webworms are probably what they are after. Look for blackbirds, robins and flickers.

Will sod webworms kill turf?

Larvae RARELY kill turf but fine fescue and perennial ryegrass are at the greatest risk of death.

What is the best method to get rid of the sod webworms?

Overseeding with ENDOPHYTE enhanced ryes and fescues is a good way to get rid of sod webworms.

Flooded Turf and Salt Water Overwash

How long will turf tolerate submersion?

Reduced oxygen and lack of light are the two primary factors in turf flooding injury. It also depends on water temperature, turf species, how long turf stays flooded, water movement, silt, algae and flooding depth.

In a worst case scenario, how long will it be before turf is killed?

Worst case scenario means bright sun and temperatures of 85-90. Turf can be killed in 24 hours under these conditions. Stagnant water also hastens death. But, if water temperature is 50 degrees or less and conditions are primarily cloudy, turf can survive flooding for up to 2 months.

Which grasses are the most and least tolerant of flooding?

Creeping bentgrass and rough stalk bluegrass are the most tolerant of flooding. Kentucky bluegrass has moderate tolerance. Annual bluegrass and rye are the least tolerant.

What do I do about mud and standing water after a flood?

Going out with heavy equipment immediately can cause more harm than good, so patience is a virtue. Wet soil is much more easily compacted by equipment. Try to pump any standing water into nearby drains to allow area to dry out. Don't be alarmed if some areas remain under water for several days.

What should I do about mud or soil deposits on turf as water begins to recede?

Mud or soil deposits should be scraped off as soon as is practical without damaging the area with heavy equipment or excess traffic. Your goal is to expose turf leaves so photosynthesis can resume. Be prepared to need multiple aeration treatments to break through remaining deposits.

Why is water not draining in areas that used to be fine before the flood?

Flood waters leave a fine layer of soil behind, which can act as a perched water table that surface water, and roots or air for that matter, cannot get through. Core aerate the flooded area several times to break through this deposit and restore drainage, and air movement and give an avenue for root growth. Flooding can also destroy soil structure and make soil "collapse" on itself, leading to flood induced compaction. Again core aeration is key. Leave aeration holes open.

Is it worse for turf to be flooded in warm temperatures or cool temperatures?

Warm temperatures are worse because oxygen is used up more quickly due to more rapid plant respiration and microbial or algal growth.

If temperatures are over 80, how fast does flooded turf start to die?

Potentially within 30-60 minutes.

How tolerant are different grasses of flooding?

Creeping bentgrass is the most tolerant of flooding followed by Kentucky bluegrass, perennial rye, tall fescue and annual bluegrass

If temperatures are cool, how long does it take Kentucky bluegrass to begin to lose quality?

Usually 9-10 days after being submerged.

Is still water or moving water worse for turf survival chances?

Still water is worse because of reduced oxygen and increased temperatures.

What are the best tools to remove silt and debris from flooded turf areas?

Snow shovels, powerbrooms, and hoses.

What about salt water? Should I get my soil tested for salt?

You should get your soil tested but be aware that different labs use different ways to measure salt. Most water that is acceptable to turf contains 200-800 ppm soluble salts and levels greater than 2,000 ppm can cause injury, especially if drainage is poor. To convert test results from various labs to parts ppm (parts per million) use the following conversion: 1 ppm = 1 mg/L = 1 meq/L

If your lab has delivered results in mmho/cm, dS/m, μ mhos/cm, or S/m, know that salt sensitive Kentucky bluegrass will tolerate salts up to 3 dS/m. Use the following conversion :
1 mmho/cm = 1 dS/m = 1000 μ mhos/cm = 0.1 S/m. So if you end up with 3-10 dS/m, there are not a lot of turf species that will survive

Turf Renovation: Seeding

When is the best time to renovate?

Late August through mid September.

How late can I push my renovation?

The first week of October.

What is the number one mistake made during total renovation?

Bringing in soil from a remote site. This leads to layering and drainage issue or a cement like soil as finer particles mix with larger particles. Never use sand to amend clay or clay to amend sand. Instead, work with the soil you have and improve that soil with organic matter.

Are there any pre-planning steps I should take prior to renovation?

Make sure that you have reserved your power equipment ahead of time at your rental agency since many other people will have the same idea that you do, and make sure that you have soil amendments like compost on hand, or delivered ahead of time, so that you can get a pH of the material. You should also get a pH of the existing topsoil so that you know how much lime to amend with if any. A final pH of 6.3-6.8 is crucial for the soil structure and for nutrient uptake by grass.

Do a phytotoxicity test on your compost by attempting to sprout cucumber seeds in several small pots of compost and in several pots of soil you know has no problem. If the seeds sprout and then turn yellow and die before they develop true leaves, you know your compost has problems, possibly too much salt.

What is the best way to get rid of the old turf?

The fastest way to do this for those of you on a limited time budget is to rent a sod cutter and strip it off. Set the sod cutter on the lowest setting so you get as much of the old root system as possible.

The other way is to apply Glyphosate herbicide at the labeled rate, wait five days, and then plow the dead turf in as an amendment. **KNOW** that the chunks of dead turf may not break up easily resulting in hummocks which will leave grass seed high and dry when you get around to seeding.

What is the first step once I have removed the old grass?

Spread your organic amendment on the surface, using a 2-3 inch depth of material, or 6 cubic feet per 1000 square feet of lawn area. Spread starter fertilizer on the soil, using 40

lbs of 5-10-5 or 5-10-10 NPK or its equivalent per 1000 square feet. Spread lime based on the recommendation of your soil pH test

What is the second step once I have removed the old grass?

Step two, fire up the rototiller. Plow your organic and other amendments in to a depth of 6-8 inches. Do not over rototill or else you break down the soil structure, leading to compaction and drainage problems. You want soil clumps from the size of a pea to the size of a golf ball. If you have a slope, don't plant it to grass, but install a low maintenance ground cover.

How should I fix a hole or a dip in the landscape?

Holes and dips in the landscape should NOT be filled in with pure organic matter or topsoil brought in. Instead mix equal parts organic matter and topsoil shaken from turf that was removed from your site and use this mix to fill in depressions.

When I am working with the soil are there any things I should avoid?

The site should slope only slightly away from the house to promote drainage. Try to avoid piling extra soil on the tops of tree or shrub roots, or scraping excess earth away from these plants since both things can damage or stress the plants.

What is the third step in renovation?

Rake the seed bed. Rake out clumps of roots, stones that are over 2" in diameter, then rake again to smooth bed. Apply a light fertilization of about a third the amount that was put down prior to the incorporation of amendments.

What is the fourth step in renovation?

Put your seed in the freezer for 48 hours to crack the seed coat. This will cut germination time in half.

What is the fifth step in renovation?

Allow the bed to settle for 24 hours. Rake a final time for levelness and then seed with a mix of grasses that are appropriate for your site and at rates appropriate for the type of grass you have selected. Divide seed mixture in half and sow each half in opposite directions so that there is good overlap. Make sure to compensate for unviable seed by calculating the pure live seed rate.

Can I skip mulching the seed?

NO!!! This is very important to conserving moisture around the seed. Mulch using a bale and a half of **straw**/1000 square feet. You will not need to remove this unless you

have applied it too thickly. (Don't use hay since hay contains lots of weed seeds). You should see about 50% bare ground, 50% straw.

How should I water my newly seeded grass?

This is one time where we recommend light, frequent waterings, and make sure the waterings are gentle since seed is easily washed away. Mature turf is watered differently.

Initially water to a depth of 5-6 inches and then water lightly several times a day. **You will not be able to back off this regimen until the grass is at least 1.5" long!**

Light and frequent means enough to keep the upper 1 inch of soil moist

You can decrease irrigation to once a day at the level of 0.25" depth of water once turf is 2 inches tall (or if sod no longer lifts easily by hand)

Keep this level up for 3-5 days

THEN skip a day between irrigations, applying 0.3-0.5" depth of water to wean the turf off light frequent irrigation.

Do this for about 1.5-2 weeks then continue to provide deep, infrequent irrigation as you would for mature turf

How should I mow my newly seeded turf?

When grass reaches a height of 4 inches, mow it back to three and begin to treat grass like a normal lawn. A major reason for failure is poor mowing practice after renovation so mow as soon as the first few plants reach 3" and then weekly after that. Most wait too long to mow.

How should I fertilize my newly seeded turf?

You SHOULD fertilize with 0.5-0.75 lbs N/1000 sq ft 4-6 weeks after seeding for maximum establishment. This usually means you would perform post emergence fertilization at 1.5 to 2 inches. Use starter fertilizer. The county fertilizer law does not allow fertilization between November 1 and April 1 so time your applications wisely.

Do I have to fertilize my newly seeded turf?

YES. If you do not, you run the risk of disease (damping off) which can completely destroy your new turf stand.

Can the composition of fertilizer applied the year after seeding affect my newly seeded turf the following year?

Yes. The year after seeding when using a regular fertilizer, the proportion of N to P to K affects the amount of grass growth. This can be especially important with the new state wide phosphorous law. You may be able to manipulate ratios to get better results after your initial use of starter fertilizer for seeding and follow up.

Combinations for Fertilizing the Year After Establishment

- No phosphorous, low nitrogen formulation: make sure K is also very low or else you will have less growth
- No phosphorous with moderate to high nitrogen, potassium level does not matter
- No phosphorous with very high nitrogen, get more growth with more potassium

Here are some “To Don’t” items when you are considering turf renovation.

People love to add a 1-2 inch layer of sand, organic matter or loam to top existing soil in an effort to improve their lawns but this practice rarely succeeds and can result in layering effect that impedes water and fertilizer movement into the soil and restricts the grass' ability to root

Avoid skid steer renovation. The result is compaction, and when water hits seed on compacted soil it follows the path of least resistance resulting in rivulets of bare soil with sand on top where the crabgrass will love to grow and very spotty take of your turfgrass seed.

New building or renovated building with no lawn? Resist the urge to GRADE and quickly seed or sod. The reason for this is that the soil must settle or be compacted after grading. Each foot of soil moved could settle up to two inches resulting in a rough lawn in a year or two

Speaking of grading, do you really need to? The goal is ensure adequate surface drainage of the turfgrass area. Why would you grade if you don't need to? The minimum grade should be 1-2% (2.4-4.8 inches drop in 20 feet) sloping AWAY from buildings. AVOID a grade of more than 25% (a drop of more than 25% or a drop of 1 foot in 4 feet). It will fail, you can't mow it, and, especially on south side, will have drought and chinch bug issues.

Turf Renovation: Sod

Are there a couple of major mistakes to avoid when I install sod?

YES! Prepare sod bed just the same as seed bed: the worst mistake you can make is to lay sod over existing turf or to only scratch the area lightly---you are asking for the sod not to take.

The other essential step you MUST do is to core aerate 4-6 weeks after the sod is installed to provide a channel for roots to get beyond the soil that was on the sod at installation. Even if you have done everything else correctly, if you do not do this step you are likely to have sod failure. The reason for this is most sod is grown on fine textured soils so when placed over sandy soils, you'll get a perched water table so that the sod roots rot.

How deep should the roots be before I core aerate?

Core aerate sod when it gets to a root depth of 2" to reduce risk of layering (4-6weeks after installation).

How should I fertilize my new sod?

You still need to incorporate preplant fertilizer, then starter fertilizer: follow the seeding regimen!!

Do I need to roll my sod after it is laid down?

Yes. Lightly roll sod with an empty roller to get rid of air pockets that later become dead spots

How long will it take for my sod to root?

Sod will root in 1-2weeks.

If I have athletic turf that is sodded, how long must I wait before play?

Sod must have rooting depth of at least 4" for play

I have been ordered to sod a slope. How do I keep the sod in place?

Use pegs to hold the sod in place and sod from the bottom of the slope up.

How do I water my new sod?

New sod needs at least 1" of water 30 minutes after installation, soil beneath should seem sopping wet

A screw driver barrel should have moisture at least 4" along it, if not add more, care for corners, edges, buildings, easy to dry out

You'll need to keep soil wet for at least two weeks after sodding, and I suggest 0.25"/day or more light and frequent irrigation because sod roots are short. Until they grow down, use a screw driver barrel to check that water is penetrating beyond the layer of soil brought in on the sod.

Tips for Irrigating New Sod

•*When do I need to water my new sod?*

•**Within 30 minutes after it is placed on soil.**

•*How much water should newly installed sod get?*

•**At LEAST 1 inch. Soil under sod should seem very wet and should be moist 3-4 inches BELOW the soil surface.**

•*How can I tell how deep the water is going without disturbing the sod?*

•**Use a screwdriver pushed through the sod and into the soil about 4 inches. The screw driver should travel easily into the soil and when you pull the screwdriver out you should be able to feel moisture along the first 3-4 inches from the blade. Use this technique as sod roots or as you water other plants to determine how deep water is going.**

•*Where am I likely to have trouble with the sod drying out?*

•**You are likely to have trouble with sod drying out at corners and edges and near buildings where reflected heat and poor irrigation distribution are typical. You may need to hand water these areas.**

•*What happens if water runs off rather than continues to soak in?*

•**You are likely to have runoff on clay soils, heavily compacted soils, or on slopes before adequate moisture has penetrated. If this happens, shut down water when runoff begins, wait 30 minutes, then resume watering. You may have to do this several times depending on slope and soil conditions.**

•*How should I water my sod during establishment?*

•**You will need to provide LIGHT AND FREQUENT IRRIGATION FOR APPROXIMATELY THREE WEEKS until sod has rooted below a depth of 1.5 inches. These watering should occur several times each day and will be about ¼ inch depth.**

•*How do I know how much water I have delivered to my sod?*

•**Take the guess work out of how long you need to get that ¼ inch by using an inexpensive rain gauge to measure output of the irrigation system. If conditions are hot and dry or windy you may have to water more frequently to prevent sod from drying out.**

•How do I know if I have delivered enough water to my sod during establishment?

•Once again, use a screwdriver pushed through the sod and into the soil about 4 inches. The screw driver should travel easily into the soil and when you pull the screwdriver out you should be able to feel moisture along the first 3-4 inches from the blade.

•What if there is a heat wave of sustained drying wind during establishment? Can I do anything to help the sod survive?

•If temperatures are 95 F or higher, or if there is high wind for more than half of the day, set the sprinkler system to go off multiple times between the hours of 11 and 2 to provide only a light sprinkling in addition to regularly scheduled watering. These light sprinkles are designed to cool off the crown of the grass by evaporation in order to prevent “heatstroke” in the turf, which really means keeping the crown cool so no permanent damage occurs.

What About Shade and Turf?

Can I grade the amount of light my turf gets in a way that I will be able to know how well it will do?

Yes. Grade it in the following manner with A being the best quality turf. If your turf is in shade don't renovate until the shade issue is taken care of. Turf needs at least 50% sunlight=minimum 4 hours daily for turf to survive, 6 hours to thrive.

Grade A = 8 or more hours of sun

Grade B = 6-8 hours

Grade C = 4-6 hours

Grade D = 2-4 hours

Grade F = less than 2

Can I prune trees to provide more light to my turf?

Yes. Prune for open, dappled light. Prune interior branches of the canopy back to the trunk. Do not root prune.

I want to remove fallen leaves from turf that is in shade. Can I rake them?

Rather than raking leaves off grass in shade, blow leaves off to avoid ripping weak plants.

What should my mowing height be on grass in shade?

Use a full inch higher mowing height than grass in sun.

Can I use herbicides to get rid of weeds in shaded turf?

It is best not to use them because the weaker grass in shade may be affected by your herbicide applications.

Is there a kind of fencing that is better for turf grown in shade?

Open fencing is better for grass growth because it lets in more light.

Is shade different in winter?

YES. The angle of the sun in winter is lower. Turf is under greater stress where shading occurs in winter---for example objects on north side of turf cast long shadows, and turf never really dries out. Take photos of problem areas through the season and you may be surprised at what the shadows can tell you.

Is morning or afternoon light better?

Morning light is better.

How well do different kinds of grass tolerate shade?

Warm season Zoysia is moderately shade tolerant. Of the cool season grasses, fine fescue is more tolerant than bentgrass which is more tolerant than rough stalk bluegrass which is more tolerant than Poa supine, which is more tolerant than tall fescue which is more tolerant than shade tolerant Kentucky bluegrass. Most Kentucky bluegrass is NOT tolerant of shade and rye grass NEVER tolerates shade.

Is there anything I should look for in a grass seed “shade” mix?

Make sure your shade mixes are NO MORE than 15% perennial rye or rye will out compete the other grasses and then die because it can't make it for long in shade.

Are there any trees I can plant grass under and still get a decent stand of turf?

Avoid turf under dense canopied, shallow rooted trees such as maples, oaks, magnolias, elms, sweet gums, willows. A better choice for growing turf underneath are poplars, ginkgos, birches, or locusts.

Should I fertilize differently in shade?

Yes. Fertilize at half the normal rate in shade EXCEPT if you have heavy traffic in these areas. Increase potassium in shady areas.

Is it alright to walk on grass in shade?

Try not to walk on grass in shade. Reduce traffic due to shallow root systems and low recuperative ability.

Turf growing in shade does not need as much water, right?

Wrong! Turf under trees tends to be water stressed because the tree canopy excludes rainfall and the water that makes it through is used by tree roots before turf can get it.

Will I have to renovate grass grown in shade more often?

Yes. Any grass grown in shade will have to be renovated in about five years.

If I have shade, what grasses should I use?

If you have less than 70% shade, try:

Kentucky bluegrass Birka, Touchdown, Bristol, Glade, Nugget, Eclipse, Bensun, Princeton 105, America, Chateau, SR 2000 but these varieties do better the more light they get

Tall fescues: Rebel II, Falcon, Mustang, Arid, Jaguar, Cimarron, Bonanza

Fine fescue: Bighorn sheep fescue, hard fescues Biljart and Reliant, Chewings fescue Jamestown and Banner, creeping fescue Fortress, Ruby, Ensylva

At what point of shade is it pointless to try to grow turf?

If shade above 85% you can't grow turf. If shade is 70-85%, you will be limited to moisture loving *Poa trivialis*.

Maintenance Program Tweaks for Growing Turf in Shade

What are the effects of shade on turf that may require changes in turf maintenance?

- Shortened roots
- Reduced wear tolerance
- Reduced shoot density (thinning)
- Decreased vigor
- Elongated, skinny stems
- Increased disease

What is the best turf for dry soil in shade? What seeding rates should I use?

- Fine fescues: 5 lbs seed/1000 sq ft
- Red: 3.5-5 lbs/1000
- Chewings: 3.5-5 lbs/1000
- Sheep: 3-4.5 lbs/1000
- Hard fescues: 3-4.5 lbs/1000

What things do I need to keep in mind when I use fescues?

FINE FESCUES DO NOT TOLERATE CONSISTENTLY WET SOILS, DO NOT TOLERATE FOOT TRAFFIC, AND DO NOT TOLERATE MORE THAN 2 LBS ACTUAL NITROGEN/1000 SQ. FT /YEAR WELL.

What else should I know about individual fescues?

Creeping red fescue: *Festuca rubra trichophylla* or *littoralis*; dense turf, weakly rhizomatous: varieties FORTRESS, RUBY, ENSYLVA. PREFERS SHADY, COOLER areas than other cool season turf. DOES NOT TOLERATE WET. Does not tolerate high fertility.

Strong creeping red fescue: *Festuca rubra rubra*, less dense, better rhizomes, spreads well.

Chewings fescue: *Festuca rubra communata*: no rhizomes, very dense, not as temperature extreme tolerant but considered most attractive. Varieties: JAMESTOWN, BANNER, SEVEN SEAS. Very drought tolerant, not as wear tolerant as other fescues, germinates in 14 days, can be mowed at 1.5 inches.

Hard fescue: *Festuca longifolia*: non-creeping bunch type, better disease and drought resistance than creeping fescue, slow growing and well adapted to shade and poor soils: varieties: BILJART, RELIANT. Salt tolerant, does not tolerate high heat, cannot be mowed as low as other fescues.

Sheep fescue: *Festuca ovina*: used for soil stabilization, makes a clumpy turf; very drought tolerant and does well on gravelly or sandy soil; does not need to be fertilized: variety: BIGHORN.

What is the best turf for wet soil in shade? What seeding rates should I use?

For shade and consistently moist or wet soil, try Rough bluegrass: *Poa trivialis* var. Sabre or *Poa supina*. The seeding rate for both: 1-2 lbs/1000 sq. ft.

TIP: both of these grasses may keel over similarly to bentgrass so both need to be cut at 2.5 inches even in shade.

What is the best turf for moderate soil in shade? What seeding rates should I use?

The best choice is Tall Fescue: Varieties Rebel Century, Rembrandt, Millenium, Wolf Pack, Cross Fire II, Rebel II, Falcon, Mustang, Arid, Jaguar, Cimarron, Bonanza.

The tall fescue seeding rate: 7-9 lbs/1000 sq. ft.

TIP: Tall fescue needs to be mowed FREQUENTLY because it grows rapidly. Frequent mowing helps the tall fescue to remain drier and have less humidity in the canopy PLUS it stimulates dormant buds and helps turf to remain more dense. If you want to mow once a week or more frequently as a money making service, tall fescue is a great choice

My boss says we have to plant Kentucky bluegrass even though it does not do well in shade. What should I do?

Light shade, moderate soil: try varieties of Kentucky bluegrass Glade, Bensun. Less than 70% shade, try Kentucky bluegrass America, Chateau, Explorer, Nuglade, Princeton 105, SR 2000, Birka, Touchdown, Bristol, Nugget...but do better the more light they get.

Kentucky Bluegrass Seeding Rate: 1-2 lbs/1000 sq. ft

But how do I judge the amount of shade?

Grade A = 8 or more hours

Grade B = 6-8 hours

Grade C = 4-6 hours

Grade D = 2-4 hours

Grade F = less than 2

Heavy shade = less than 25% daily sun

If shade above 85% just can't grow turf

4 hours sun daily for turf to survive, 6 hours to thrive

How should I fertilize turf in shade?

GO back to the idea that shaded turf has shorter roots BUT there are also tree roots that will compete for food and for water.

The solution: light, frequent, spoon fed fertility that will not bug the tree, will not cause an increase in disease or turf canopy that cannot be supported by short weak roots or be washed beyond roots by irrigation that also must be changed.

Are there specific BMP for fertilizing FINE FESCUE turf in shade?

0.5 pounds actual N of at least 30% slow release N the third week of April
0.5 pounds actual N of at least 70% slow release N the third week of May
0.5 pounds actual N of at least 50% slow release N the second week of September
0.5 pounds actual N of at least 30% slow release N the third week of October

Are there specific BMP for fertilizing TALL FESCUE turf in shade?

0.5 pounds actual N of at least 30% slow release N the third week of April
0.5 pounds actual N of at least 50% slow release N the third week of May
0.5 pounds actual N of at least 50% slow release N the third week of August
1 pound actual N of at least 30% slow release N the third week of October

Are there specific BMP for fertilizing KENTUCKY BLUEGRASS turf in shade?

0.5 pounds actual N of at least 30% slow release N the third week of April
0.5 pounds actual N of at least 50% slow release N the third week of May
0.75 pounds actual N of at least 50% slow release N the third week of August
0.5 pound actual N of at least 30% slow release N the third week of October

Do I need to think about potassium in shade?

Yes. Look at N-P-K ratio. The N number and potassium number should be the same (roughly) or the N number twice the K number. Potassium at the correct level will help increase drought and disease tolerance. Drought and disease are major issues for weaker grass in shade.

Moss is associated with potassium deficiency in soil.

Why do I have so much moss in shade?

Inadequate potassium, high calcium to magnesium ratios (STEP for improvement: switch to DOLOMITIC LIMESTONE), and heavy soil all contribute to moss as does acid soil.

TIP: Correct fertility can reduce the occurrence of moss in shade grown turf.

Moss lifecycle: normally starts with fall rains and peaks in early spring. Because grasses grow poorly in winter, moss invades and outcompetes grass at this point. This more easily done when turf is already poor from being shaded. Moss encroachment is associated with thin turf, low fertility, high acidity, shade, wet soils, turf injury from disease, insects, chemicals or cultural practices.

How should I fertilize in shade?

Bluegrasses require more N than fescues, and fescues will be thinned by excess N fertility. Fertilize slightly higher than the rate you would use for that species in a sunny area if you have lots of foot traffic. The general recommendation is that you should fertilize at HALF the normal rate in shade EXCEPT if you have heavy traffic in these areas. See specific recommendations for specific grass species types above.

How should I irrigate turf in shade? What are the concerns?

Concerns are as follows: humidity including irrigation contributes to disease which is greater in shaded areas anyway, tree roots that compete for water, grass roots are shorter in shade, and the tree canopy tends to shed natural rainfall like an umbrella leaving area beneath where turf is located water stressed.

Tree roots and grass roots need to be watered SEPARATELY without over watering one and underwatering the other

Begin with the tree:

Start with depth of water to penetrate soil: Most tree roots are in the top 18 inches of soil. One inch of water penetrates 12 inches so you can use a depth of 1.5 inches of irrigation. How long will this take your system to deliver? Multiply from chart.

To wet soil 6-9 inches, run this long:

| If in 15 min. Your system applied | Sandy soil | Intermediate | Clay soil |
|---|-------------|--------------|-------------|
| 1/8 inch | 30 minutes | 60 minutes | 120 minutes |
| 1/4 inch | 15 minutes | 30 minutes | 60 minutes |
| 3/8 inch | 10 minutes | 20 minutes | 40 minutes |
| 1/2 inch | 7-8 minutes | 15 minutes | 30 minutes |

Grass may need an in-between drink.

Go back to the chart and choose a length of time directly from the chart. Give this to your grass as a top off between once weekly 1.5 inch depth tree irrigations.

This SHOULD keep grass and trees adequately hydrated and not overhydrated no matter what the status of your irrigation system. Just make sure you install a rain sensor on your system.

What time of day should I water?

Water between midnight and 8:00 AM. Never water in late afternoon or in evening before midnight in order to reduce disease.

How should I mow in shade?

Mowing height should be a FULL INCH higher in shade than in sun, or even up to two inches higher except for Tall Fescue which should be no taller than 4" and *Poa supina* or *Poa trivialis* which needs to be kept at 2.5". The higher mowing height also makes the turf more traffic resistant. This allows the plant more surface area to make food.

Mow with a VERY sharp blade because grass grown in shade is "soft" and will rip out easily with a dull mower blade.

Dull mower blades also increase disease and water loss.

Are there tips to help me renovate turf in shade?

Shade grown turf usually needs to be renovated every five years no matter what.

If overseeding shade grown turf, meticulous attention to leaf removal is needed. Rather than raking leaves off grass in shade, blow leaves off to avoid ripping weak plants.

Do not bury seed more deeply than 1/8" because it will not germinate.

Make sure newly seeded areas stay moist until the seedlings have put down sufficient roots to fend for themselves.

This means light and frequent irrigation. Light and frequent means enough to keep the upper 1 inch of soil moist. You can decrease irrigation to once a day at the level of 0.25" depth of water once turf is 2 inches tall (or if sod no longer lifts easily by hand). Keep this level up for 3-5 days. THEN skip a day between irrigations, applying 0.3-0.5" depth of water to wean the turf off light frequent irrigation. Do this for about 1.5-2 weeks then continue to provide deep, infrequent irrigation as you would for mature turf

Could you give me some specific ideas for proportions of grass seed types in shade seed mixes?

DRY MIX:

- $\geq 50\%$ fine fescues
- $\leq 40\%$ Kentucky blue
- $\leq 15\%$ rye

MOIST MIX:

- $\geq 20\%$ rough bluegrass
- $\geq 10\%$ supina bluegrass
- $\leq 40\%$ fine fescues
- $\leq 40\%$ Kentucky bluegrass
- $\leq 15\%$ rye

Maintenance Tweaks for Growing Turf on Edges and Medians

I need a low maintenance grass that will tolerate the droughty conditions in my medians and sidewalk turf strips. I thought fine fescue would be perfect but it is not growing well. What is going on?

Fine fescue is great for droughty sites but it hates heat. Medians and sidewalk turf strips are hot and have high traffic, two things that fine fescues HATE. Try tall fescue instead. It is the most heat tolerant and will also stay greener much longer than other turf types in droughty conditions.

Shouldn't rye work in these settings as long as they are in full sun?

No rye should not be used because of its intolerance to salt.

I have constant problems with crabgrass even though I am using a crabgrass preventative in medians and sidewalk strips. Why?

Crabgrass control will need to be applied EARLIER because these areas heat up quicker.

Each time you edge you will need to reapply the crabgrass barrier.

Are you blowing the crabgrass barrier granules away from the area during clean up with a leaf blower?

What changes should be made to irrigation scheduling for turf in a median or sidewalk strip?

Roots will be shorter because of compaction, so must adjust irrigation schedule to accommodate the length of roots plus the increased heat. This may mean more frequent irrigation.

How should I fertilize turf in a median or sidewalk strip?

SPOON FEED fertilizer. No more than 0.25 lbs of actual nitrogen at one time because of the short roots and the potential for runoff onto hardscape due to compaction.

USE STRAIGHT fertilizer OR herbicide, NOT combo weed and feed products. This is due to laws and timing plus with the increased weed pressure in these settings using the combo products is going to feed the weeds more than anything, OR because of the thin turf, the fertilizer will be washed through or away.

I am SO frustrated trying to reseed medians and sidewalk strips. What can I do to make it take better?

Hydromulching is very helpful.

Covering seed with cheese cloth is helpful to keep seed from moving off site. The cheese cloth will simply rot away. You can also use polyester spun fabric but this must be removed. This last is a good alternative for establishing grass seed early in early spring.

Dusting seed with compost or soil may help it to stay in place.

Try seeding with 20% more to compensate for seed that falls or is washed over the side.

What can I do about as rim of soil built up along edge of side walk so that the angle is sharp and seed rolls off?

Can install steel edging next to concrete that sticks up as a lip to keep it in place. You can also diaper in seed with cheese cloth and wire pins. The cheese cloth does not have to be removed.

Raise mowing height because turf in these areas is chronically scalped.

Hydromulch.

Reduce the ridge by leveling off with a spade and reseeding.

Raise the concrete edge of the curb.

Mowing Problems

What is scalping?

Scalping occurs when the mower is making contact with the ground and chews the grass off at crown level.

Why does scalping occur?

Reasons:

Tire pressure is uneven or low, resulting in mower “belly drag”
Terrain is uneven, or there are hidden ruts
Mowing too quickly with the blades set low so grass is pulled up
Mower deck is not level

What is “Stepped” grass?

“Stepped” grass looks like it is cut on an angle.

Reasons:

Mower deck is bent or uneven
Blades are bent
Spindle is wrong one for mower
Spindle is incorrectly mounted
Deck brackets bent or uneven
Tire pressure uneven
Wheels uneven

Why is grass “uneven”?

Uneven grass looks like an opened book with spine sticking up in the center

Reasons:

Mower deck at the wrong angle
Accumulated grass forming a “blockage” on deck
Dull blades
Upside down blades
Raising mechanism for blade is malfunctioning
Bent spindle mount
Uneven ground

What are “Skips”?

Skips are bits of grass sticking up that were missed by the mower.

Reasons:

Throttle set too low

Mower moving too quickly

Blades are not sharpened correctly

Grass mowed when wet

Deck has grass "blockage"

Mower belt is slipping

What are mower "Lines"?

Lines are thin lines of uncut grass.

Reasons:

Overlap incorrect (less than 4 inches)

Dull blades

Bent blades

Ill fitting blades

Engine not at full throttle

Mower moving too quickly

Grass mowed when wet

Deck has "blockage" of accumulated grass clippings

Belt is slipping

Skidsteers and Turf Renovation

I know that a skidsteer is not the best choice for renovating but I have no choice. Most contractors use compact utility loaders and mini skidsteers. Which ones are easy on turf? Is there an industry standard??? What ground pressure is acceptable?

An adult standing on turf exerts 6-8 psi while tracked machines exert 2-4 psi and large flotation tire models exert 6-8 psi.

What is the difference between traditional skid steers and more friendly compact utility loaders?

You DO lose power when you exchange for smaller equipment that treads more lightly on turf but the smaller equipment is more maneuverable and lighter---which makes them a lot more prone to flipping over. Smaller machines do exert less pressure.

Smaller “articulated” models are also good for the turf in that they reduce the twist and turn and grind effects of the larger machines.

What kind of tires should I use in a low weight machine?

Low weight needs to be coupled with large, turf type tires and narrow width for efficiency in small spaces. Even weight distribution is critical.

What kind of width should I look for in a small machine?

The best is something that can fit through a 36-48” gate.

Should I purchase over-the-tire tracks?

If you are thinking about getting a model with over the tire tracks as accessories, remember that *extra power* is required to run the tracks and it is a ROUGH ride for the operator...if you have big tires, forget the over the tire track accessories.

What is the best turning radius to use to avoid damaging the turf?

Choose long radius turns versus 0 radius turns to avoid turf damage.

Does a tracked vehicle or a vehicle with tires cause more damage to turf?

A tracked vehicle can cause more damage than tires because it has more overall surface area contact with the ground.

Machines with tracks distribute the weight of the machine over a larger footprint which minimizes damage to turf BUT tracks tend to increase the possibility of damage if working in a confined area where 0-turning radius is a necessity.

In general, a rubber tire leaves more of a footprint than a track.

If you routinely work in muddy or wet conditions (irrigation, naturally wet sites) go for tracks which provide superior flotation.

I have heard that wide tires are better for not damaging turf. Is this true?

Wider tires can reduce ground pressure to about 11 psi, so choosing wide tires over tracks takes up some of the flotation and weight distribution slack without drawing excess power.

I have no choice of tires versus tracks...I have to use tracks, but which kind should I use?

Rubber or kevlar tracks do less damage to soft ground than steel tracks with metal lugs. Traction is determined by these large lugs which are very abrasive and tear up grass. Steel is the worst for soft surfaces and better on hard surfaces.

If I have to use heavy equipment for turf renovation, what is the most turf friendly?

Articulated models are the most turf friendly because you'll have less drag because the machine is hinged in the middle and turns by angling towards the direction of travel. This results in less scuffing and many machines pivot to keep all four wheels on the ground.

Articulated models do NOT have the lifting capability of skid steers

Skid steers twist from side to side and scuffs turf or soil.

You also can get models with full chassis oscillation so you get maximum grip on all sorts of ground which is a good fit for tight areas and tight turning radius ability.

Are there any tips to help reduce damage when using heavy equipment to renovate turf?

Always keep an eye on tracks or tires to make sure spinning or sinking is not occurring.

When moving forward, backward or turning, make sure all wheels or tracks are moving at all times because damage will occur otherwise. For instance, if a tire is not rolling it will "skid" on turf or soil and tear roots or create focal compaction. Think

about a supermarket cart that only has three wheels turning and how the inoperative wheel “drags” or scuffs. Turf that is dragged by the rogue wheel will likely die.

When turning, make wide turns to reduce stress.

Turf Traffic Use Guidelines

How much foot traffic is too much foot traffic?

When turf is used by 50 or more people each day, there will be damage.

What are some considerations for reducing turf use?

Rotate use sites among turf areas, e.g., rotate playgrounds, practice fields, etc.

After 10 uses per week, turf should be allowed to rest and recover.

Use permanent goal posts only for very important games.

Share community youth activities (Little League, soccer, La Crosse) among sites like schools and parklands.

Grass needs to have recovered from winter dormancy before you start using it in late winter and early spring.

DO NOT PLAY on the thawed surface of frozen turf. You will ruin it by crushing and abrading the crown.

There should be minimum use during periods of rain or irrigation.

Is there a better way to oversee turf use and planned activities?

Yes! A single contact person should be responsible for scheduling PLUS there should be a grounds committee to come up with a rotation plan, establish the importance and uses of each turf area, how much of the specific turf area can be used for what purpose, differences in priority for use by daily users such as students or campers versus outside users or visitors, and estimate how much use each area can have before it must be rested. Be sure to include soil type and irrigation availability in your committee's plans. Members should visit each turf site at least twice a year.

Tweaking Turf Maintenance for Wet Turf

What are the primary problems of very wet turf?

No oxygen in soil for roots because oxygen has been replaced in pore space by water. Turf yellows and has very little root system because the majority has rotted off.

Turf slips against wet soil underneath when pressure is applied. Crown tissues are crushed and roots dislodged

Turf roots are short because of root rot and dysfunctional in terms of taking up water and nutrients or for cooling the plant off. Shallow watering may have to become the norm.

Wet soils that heat up also cause the plant to use more oxygen when there is already a deficit of oxygen.

I have horrible mowing tracks in wet turf no matter what I do. Is there anything that I can do to minimize this?

To minimize mowing tracks: set blades to highest mowing height to reduce clipping clumping.

Make sure blade is sharp because turf habitually in wet conditions is weak and tears off its root system easily when tugged at by dull blades

Clear any residual clippings from previous sites from under mower deck for a cleaner cut.

Do a second cut shortly after first in a different pattern than the first to alter track path and to minimize the look of tracks in the lawn.

Scagg Velocity and John Deere 7 Iron are reported in the Midwest to handle wet turf cuts better than some of their counterparts---better perhaps at dispersing wet grass without clumps. Barring specific brands, 72" decks seem to handle wet grass better.

Sometimes a site looks fine but when I really start to work on it I realize it is a very wet site. Before I go on a site is there a way I can tell that I am going to potentially have problems with wet turf?

Yes. (Also see section on drainage) You can do a drainage quick check. Wet the area in question with 2-4" of water. After water moves into soil, wet with another 2-4" water. If water pools now on the surface or penetrates the soil slowly, sub-surface drainage may be inadequate.

Step into a puddle. If you sink in up to your ankle it is a subsurface drainage issue. If it is firm under foot, it is a surface drainage issue.

Soil under wet turf is often compacted and may actually be causing the surface wetness if a perched water table is involved.

Is there anything I can treat the surface with to make the water disperse?

Wetting agents may actually help water to penetrate and move off the surface decreasing the surface tension.

Is there anything I can do to improve seeding or re-seeding muddy lawn areas?

Spread straw BEFORE you attempt to seed, 1-2 bales/1000 square feet. You should see half straw, half dirt. This will give you a little substrate to walk on or roll light weight seed spreader across.

Seed from a diagonal so you will not have to walk over any area twice.

A hand crank seeder may work best in really wet conditions.

If conditions are super wet and the area is small, seed, then cover with cheesecloth (you will not have to remove and it will help to soak up water).

You may not need to water.

You may need to increase seed by 20% to adjust for rot.

Are there any cardinal rules for wet turf?

KEEP TRAFFIC OFF: use walk behind mowers that are light weight.

Slopes that are wet are extremely dangerous. Plant growing covers instead to avoid machinery accidents and slippage.

Spoon feed: with water saturation constantly an issue, the roots are likely to be SHORT, so no heavy fertilization and you may not even need to water in depending on how wet the site is. Otherwise you'll get top growth the roots can't support and the fertilizer will be pushed past where the roots can get at it. Excess fertilizer plus water = disease, especially brown patch.

Constantly wet lawn fertility schedule:

April 15 0.25lb

April 30 0.25 lb

May 15 0.25 lb

May 30 0.25 lb

July 1 0.25 lb very slow release

August 1 0.25 lb very slow release

August 30 0.25 lb

Sept 15 0.25 lb

Sept 30 0.25 lb

Oct 15 0.25 lb

Oct 30 0.25lb

What grass should I plant in a constantly wet area?

Poa trivialis tolerates consistent wet in sun as well as shade. Fertilize it with 2.75 lbs actual nitrogen per year IN SUN.

Poa trivialis may lie over like bent grass, producing yucky mow results so mow at 2.5".