

HYG articles

July 29, 2020

Chinch bugs



Chinch bug life stages, David Shetlar, The Ohio State University, Bugwood.org

There are two species of chinch bugs that can cause damage to turfgrass in Illinois, the common chinch bug in southern and central Illinois and the hairy chinch bug in northern Illinois. Both species feed on Kentucky bluegrass, fescues, ryegrass, bentgrass and zoysiagrass. Common chinch bug also feeds on corn, wheat and sorghum.

Common chinch bug and hairy chinch bug are similar in appearance. Adults grow to be about 1/8 inch long but nymphs may be smaller. Adults are black and white, while nymphs have a black and white head and thorax with a reddish-brown abdomen.

Chinch bugs are usually well controlled by fungal pathogens that occur naturally in the environment. But in hot, dry conditions, they can sometimes cause significant injury to turfgrass. These insects suck fluids from the crowns of turfgrass, causing yellowing and browning in patches across a lawn. Infestations are most common in hot, dry weather and in turf that has been well fertilized.

There are two methods that can be used to scout for chinch bugs:

Method 1: Inspect the crowns of turfgrass. Chinch bugs feed at the crowns of the grass plants so that is the best part of the plant to inspect. Begin looking for chinch bugs on healthy plants along the edge of a damaged area. Part the grass with your hands and inspect the crowns of the grass plants for chinch bug

adults and nymphs. The nymphs can be quite small so a hand lens or hand magnifying glass can help. In very hot conditions they may move lower on the plant to avoid the heat.

Method 2: Flotation. Because chinch bugs are so small, they can be difficult to identify on the surface of grass plants. The floatation method can be used to separate the chinch bugs from grass and debris, so they are easier to see. To accomplish this, remove the top and bottom surface of an old coffee can, then press the can firmly into the turfgrass. Fill the can part of the way with water and let it sit for 5-10 minutes. The chinch bugs will separate from the grass and float to the surface of the water, where they can be easily seen and identified.

Control: Apply a contact insecticide, such as bifenthrin (Onyx, Talstar), lambda-cyhalothrin (Scimitar), deltamethrin (DeltaGard) or trichlorfon (Dylox), on the surface of the grass. The chinch bugs will consume the pesticide as they pierce the plants to feed.

[Sarah Hughson](#)

Fall Webworm

Fall webworms (*Hyphantria cunea*) are communal caterpillars that spin silk into a tent-like structure at the tip of branches. These webs are often built around leaves they feed on. Fall webworms feed on a wide range of deciduous trees and shrubs, including, but not limited to, crabapple, redbud, sweetgum, maple and oak. As the caterpillars consume the leaves within the web, they will expand the web every week or so to include more leaves. The web of mature caterpillars can be 2 to 3 feet long.



Left, Fall webworm tent-like webs on crabapple Phil Nixon, University of Illinois at Urbana-Champaign
Right, visible larvae, Travis Cleveland, University of Illinois at Urbana-Champaign

There are two races of fall webworm. The northern race caterpillars have yellow-gray bodies with red heads and all white moths. The southern race caterpillars have yellow-green bodies with black heads and adults are white with small black spots on the wings. Their distributions overlap so they are both

found throughout the species range but one is more frequently encountered in the northern and the other more frequently encountered in the southern portions of their range.



Southern fall webworm mature larva, Phil Nixon, University of Illinois at Urbana-Champaign

Adults emerge late spring to midsummer and begin to deposit hairy egg masses on the underside of leaves. A few days later, the larvae hatch and begin to build silken webs over the ends of branches. You may begin to see their tent-like webs when *Hydrangea paniculata* Grandiflora (PeeGee Hydrangea) is blooming. Fall webworms usually build webs in the understory of the trees, fence-row shrubs and ornamental shrubs. Young larvae feed on the upper surfaces of leaves and larger larvae feed on whole leaves, leaving the large veins or midribs behind. While fall webworms are capable of causing significant aesthetic damage, the defoliation does not usually threaten the plant's health. This is, in part, because their populations can be well controlled by natural enemies.

Since fall webworms are unlikely to cause enough damage to harm the plant, some aesthetic damage may be tolerated and treatment may not be required. When aesthetic damage is not tolerated, there are a number of options for fall webworm control.

Pruning back branches to remove the web is a mechanical control method that can be implemented at any time and can be effective in reducing caterpillar populations quickly.

Chemical and Bt (*Bacillus thuringiensis*) treatments can be applied as a spray application when webs appear on trees. The webs are water resistance so a gentle spray will not penetrate the surface. The spray pressure must be great enough to damage the web so the insecticide can coat the leaves inside the web, where caterpillars are feeding. A stick or other tool can also be used to tear open the web before application.

Bacillus thuringiensis kurstaki treatments (Dipel, Thuricide, etc.) target caterpillars. They are more effective on caterpillars and have no impact on adult moths. Effective chemical insecticides include carbaryl (Sevin), pyrethroids and other products that are labeled to treat fall webworm.

[Sarah Hughson](#)

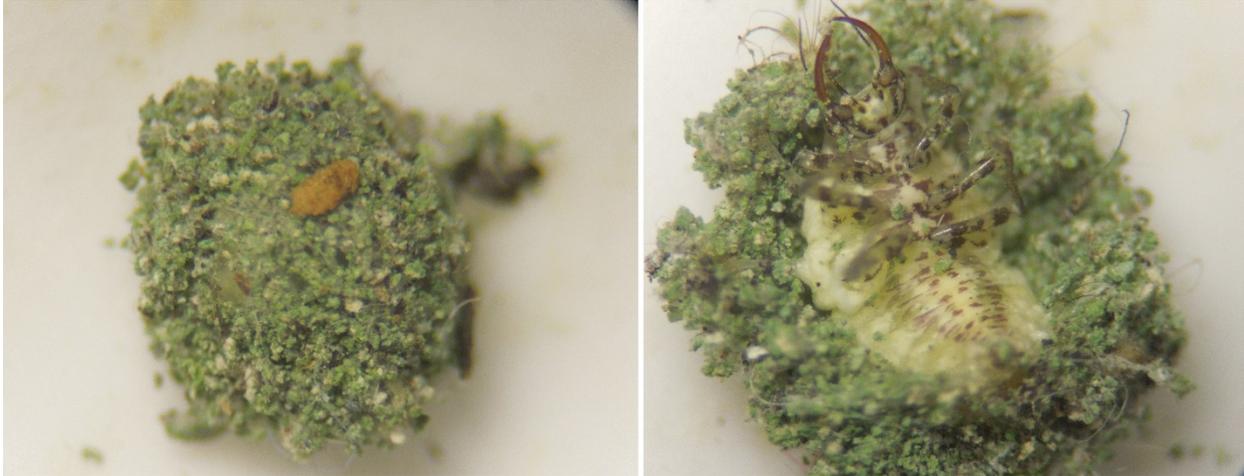
Aphid Lions

Green lacewing larvae are out in force, eating aphids. These larvae are called aphid lions, but more like little alligators than lions. They have large, curved and hollow mandibles which they use to inject a paralyzing venom and extract the juices of the aphid. After feeding, they throw the carcass down on the ground. One aphid lion can eat 600 aphids in 14 to 20 days. They also go for other small bodied invertebrates such as caterpillars, beetles, scales, mealy bugs, leaf hoppers, thrips, and mites.



Green lacewing larvae eating an aphid – Photo by Heather Lash

Aphid lion larva sometimes covers its body with carcasses of old aphids (past victims), debris, organic debris like lichens or vegetation to help sneak into an aphid colony protected by ants. It is an adaptation to get past ants that actually farm and care for the aphids. Without the armor, ants would throw the green lacewing larvae from the plant. Ants eat the honeydew (frass or poop) aphids produce. Aphids produce such sugar frass because they are unable to break down the sucrose of plants and must excrete it. This is why plant leaves are sticky when there is an aphid infestation.



Aphid lion covered in lichens and aphid carcasses – Photos by Andrew Holsinger

In the industry, this insect has been used as a beneficial insect purposely released for mealy bug and leafhopper issues. It is easy to order these eggs off the internet and put them at the base of the plant that you suspect will be overcome by a high aphid population. However, if you inspect leaves that have high aphid populations, you will inevitably run into an aphid lion larvae, egg, or see the adults pollinating flowers.

Adults prefer to lay eggs where aphids or other prey can be found. They are white eggs that are laid singly on stalk to prevent cannibalism from the other larvae, or perhaps ants. Most gardeners have seen these eggs before and probably wondered what they were. The adult green lacewing is small, pale green, delicately veined wings. You will see these all the time in the garden feeding on pollen and nectar and sometimes honeydew. They have a beautiful, golden iridescent type of eyes, green bodies, and most are active at night but can spy them flying around in the day.

[Kelly Allsup](#)

Crabgrass: Controlling This Season-Long Germinator

When there is an unknown weedy grass growing in a lawn, often crabgrass is quickly and inaccurately blamed. Further investigation typically reveals that the offending grass is often quackgrass or tall fescue. This week I saw the tables flip while some plant enthusiasts online were discussing the possible identification of a mystery seedling grass. Because it is late July, crabgrass was quickly ruled out and the fingers pointed instead towards quackgrass. Without any haste, control recommendations then moved that direction. When crabgrass is improperly blamed, I often think, “poor crabgrass” but this time found myself thinking, “poor quackgrass”.

Crabgrass is often thought of as being a spring emerging weed. However, with the recent rains, we are reminded that crabgrass can germinate all during the growing season provided there is adequate moisture. Where I live, we have been dry for several weeks and turfgrass growth greatly slowed, but the inch of rain we received a week ago was just what the crabgrass seeds needed. We are also

reminded that crabgrass is an abundant seed producer as evidenced by the large seedling populations easily found now in central Illinois. By now, many spring applied crabgrass preventers have degraded and are likely no longer doing their intended job.



Crabgrass seedlings growing in a lawn. Credit: Michelle Wiesbrook

Crabgrass is a warm season annual weed. Reproduction is by seed and it is not capable of overwintering in Illinois. So, plants will always begin as seedlings. Most crabgrass seeds germinate when soil temperatures are in the mid 60's for about 3 to 6 consecutive days. However, crabgrass seeds are capable of germinating from very early in the spring to very late in the fall as long as adequate soil moisture is present. Plants that germinate in the fall will have a short life as a hard frost will kill them. In cool season lawns, brown patches will typically be left behind.



Crabgrass in October after frost. Credit: Michelle Wiesbrook

Crabgrass stems can grow ascending to more than 3 feet in height but more typically grow prostrate, forming a mat. They are often purplish near the base and can root at the nodes. All of this tillering makes the plant very difficult to hand pull without the plant breaking off at the base of the soil. The ligule is jagged and membraneous. The leaves are pale blue–green (often bright green), hairy on both sides, flat, sharply pointed, 1/4 to 2/5 inch wide, 2 to 6 inches long, and with margins that may be rough. The leaf sheath is densely hairy. The flowers are borne in a raceme with 3 to 13 purplish, fingerlike spikes up to 6 inches long. They occur in whorls at the ends of stout stalks during August and September. Both large crabgrass (*Digitaria sanguinalis*) and smooth crabgrass (*D. ischaemum*) are commonly found in the Midwest. Although they are similar in appearance, smooth crabgrass tends to be smaller with fewer hairs on the leaves. Collectively, they are commonly referred to as simply being “crabgrass”.



The ligule is jagged and membraneous. Note the stiff hairs. Credit: Michelle Wiesbrook

Crabgrass can be found in most warm, moist, fertile lawns in sun where turf is thin or mowed too short. Often found in so called “hot spots” next to the driveway or sidewalk, it tolerates hot, dry, compacted soils after establishment. This weed may spread aggressively to crowd out desirable grasses.

Maintain turf density and health through proper culture. Avoid spring cultivation, short mowing, summer fertilization, and light, frequent irrigation. In landscape beds, mulch and other weed barriers can be used to block light and thus prevent crabgrass germination. Existing plants can be removed by hand using proper tools to ensure complete removal of tillered plants. Preventing seed production is key.

Crabgrass is best prevented by using a preemergent herbicide prior to seed germination. Irrigation or rainfall is then needed for activation. Apply preemergent herbicides before germination when soil temperatures stabilize at 55°F for several consecutive days. Many are applied in the early spring including the following active ingredients for cool season turfgrass: benefin + trifluralin, dithiopyr, oxadiazon, pendimethalin, prodiamine, quinclorac, siduron, and sulfentrazone. Older chemistry options include bensulide and benefin. Benefin alone will provide only adequate control of crabgrass. Some combination products are available. Dithiopyr will provide additional postemergent control up to the 1-tiller stage. For landscape situations, there are several active ingredients that will result in good or excellent control of crabgrass. Check the product label to ensure that this species is listed.



Postemergent herbicides may be used to control crabgrass that has already emerged from the soil. For landscape situations, a graminicide which is selective for grasses is a good route to take. These can safely be used around a wide variety of broadleaf plants. Check label specifics. Options include: fenoxaprop, fluazifop, sethoxydim, and clethodim. Cool season turfgrass options include: bispyribac-sodium, fenoxaprop, mesotrione, quinclorac, and topramezone. MSMA is approved for use on golf courses and sod farms only. With post herbicides, two applications are typically needed, 2 or 3 weeks apart if crabgrass has tillered. Smaller plants that have yet to tiller are more easily controlled. It is important to consider growth stage or size when selecting a herbicide. Most labels will provide guidance on how well they work on certain leaf or tiller sizes. Be aware that injury can occur to turf if applications are made when temperatures are greater than 85°F. So, if you must spray crabgrass this late in the season, be willing to accept some injury or wait for some cooler forecasted days.

Always carefully read and follow label directions. There may be restrictions on seasonal rate limits, growth stage, turf type, ornamental species, or site of application. A common mistake is to apply too

low of a rate. Again, the label will provide guidance. Split or sequential applications of preemergent herbicides are commonly used in turfgrass where the total amount to be applied is divided, with half applied in April and half applied 45-60 days later.

Misidentification can lead to improper control tactics being deployed, with time and money being wasted. As a result, the weed problem remains. Though not really look-a-like species, certain grasses are commonly confused with crabgrass. For more information on identifying tall fescue, Quackgrass, and Johsongrass, please see, "Is It Crabgrass or Something Else" at <http://hyg.ipm.illinois.edu/article.php?id=786>.

Grasses can be challenging to identify! For assistance, check out *Identifying Turf and Weedy Grasses of the Northern United States*. This pocket-sized guide is available for sale at: pubsplus.illinois.edu.

[Michelle Wiesbrook](#)

Pear Trellis Rust

We've confirmed pear trellis rust (also known as European pear rust) on samples from Illinois a few times over the past several years. It is still a fairly rare rust disease in Illinois. Other gymnosporangium rusts diseases (cedar-apple, cedar-hawthorn, and cedar-quince) are still much more common and are found across the state. For more information about the common gymnosporangium rusts, please see this 2017 Home, Yard, and Garden Pest Newsletter article: <http://hyg.ipm.illinois.edu/article.php?id=913> So far, pear trellis rust has only been confirmed Illinois in northern counties.

The fungal pathogen which causes pear trellis rust, *Gymnosporangium sabinae*, was introduced to the United States in the 1990s from Europe. As with other gymnosporangium rusts, it requires two host plants; in this case, the pathogen infects common and callery pear as the deciduous host and various juniper and eastern red cedar plants as the coniferous host.

In spring, orange, gelatinous, spindle-shaped galls appear on juniper branches. These galls produce spores which spread to the pear host via wind and rain. Symptoms begin to appear on pear trees in summer, as large, yellow/orange leaf spots develop on the leaves. As the season progresses, these spots often turn purple/brown and small fruiting structures will develop on the undersides of the leaves. Twig and branch galls may also form on the pear host.



Figure 1 Pear trellis rust in early summer displaying orange/yellow leaf spots.



Figure 2 Pear trellis rust in late summer. Note the larger necrotic lesions.

The symptoms of pear trellis rust can be similar to those of cedar-hawthorn rust. One diagnostic difference is the shape of the fruiting structure (aecium) produced on the underside of the leaf; pear trellis rust produces a characteristic “acorn-shaped” aecium. However, these structures are quite small and can be difficult to see clearly, and usually develop later in the growing season. Pear trellis rust also causes larger necrotic (brown) lesions on the leaves compared to other gymnosporangium rusts. Samples can be submitted to the University of Illinois Plant Clinic for rust identification.



Figure 3 "Acorn-shaped" aecium on the underside of the leaf.

Pear trellis rust poses a threat to the health of the pear host, causing reduced growth, a thinning crown, and branch dieback following several years of repeated infection. The disease does not appear to cause damage to the juniper host. Management consists of removing unwanted juniper, pruning out galls found on junipers, planting juniper species resistant to gymnosporangium rusts, and removing infected pear leaves, fruits, and twigs in late summer. Removing infected tissue from both the juniper and the pear hosts may not be feasible, depending on the size and level of infestation. Fungicides labeled for use on pear against other gymnosporangium rusts (chlorothalonil, fenarimol, mancozeb, myclobutanil, propiconazole, pyraclostrobin, tebuconazole, thiophanate-methyl, triadimefon, and trifloxystrobin) may

be effective when applied in spring at pink flower bud stage and continued, at labeled interval, 1 to 2 weeks past petal fall. Always read and follow label directions carefully.

[Diane Plewa](#)

Basil Downy Mildew

Basil downy mildew has been detected at several locations in northeast and east-central Illinois. This disease affects both homeowners growing a few basil plants for fresh harvest and commercial producers.



Basil Downy Mildew Photo: University of Illinois Plant Clinic

According to Dr. Babadoost, a professor in the Department of Crop Sciences at the University of Illinois who specializes in diseases of vegetable crops, this disease is serious for Illinois growers. Approximately 600 acres of basil are planted in Illinois, which has become one of the leading states in basil production in the country. Basil is a high-value crop, valued between \$10,000 and \$20,000 per acre.

Basil downy mildew is caused by *Peronospora belbahri*, a fungal-like oomycete (also known as a water mold). While there are a number of other important downy mildew diseases, including the infamous

impatiens downy mildew, basil downy mildew is host specific and will not infect other species. It flourishes in cooler, wet weather, so the disease is generally worst at the beginning and end of the growing season. Hot, dry weather causes the pathogen to go dormant. Symptoms first appear as diffuse yellow areas on the top side of leaves. The pathogen produces spores on the underside of leaves, giving them a dirty appearance. A hand lens can be used to look for spores and the translucent, thread-like structures that produce them. Under magnification, the undersides of the leaves appear to be covered in grey fuzz. The disease progresses quickly, with affected leaves turning brown and falling from the plant; an entire plant can be defoliated within a few days.



Underside of a basil leaf infected with basil downy mildew; clumps of spores of the pathogen give the leaf the characteristic dirty, fuzzy appearance.

It is unknown if the pathogen can survive the winter in Illinois. It is thought that it overwinters in greenhouses, or travels in on cuttings. The spores can travel large distances by wind. A small initial number of spores can quickly lead to a huge infestation.

Dr. Babadoost's laboratory has been conducting basil downy mildew fungicide trials since 2009. Because this pathogen is known to develop resistance to fungicides quickly, chemicals with different modes of action should be used. For commercial producers, there are a few chemical fungicides that are very effective against this pathogen, but they require a pesticide applicator's license and up to 17 applications a season. Dr. Babadoost recommends alternating the following fungicide combinations: at weekly intervals:

- Azoxystrobin (Quadris 2.08SC (15.5 fl oz/A)) + potassium phosphite (ProPhyt SC (4 pt/A))
- Cyazofamid (Ranman 400SC (3 fl oz/A)) + potassium phosphite (ProPhyt SC (4 pt/A))
- Revus 209SC (8 fl oz/A) plus potassium phosphite (ProPhyt SC (4 pt/A))

We do not have effective compounds for managing downy mildew in organic basil production.

Chlorothalonil, a non-selective fungicide available under numerous trade names to individual gardeners, has been shown to be somewhat effective. Copper can also be used, but like chlorothalonil, it is not very effective.

Sanitation (removing and destroying diseased plants) is an important management technique. Plants should be carefully inspected at the nursery or garden store before being brought home. Because the pathogen needs moisture to thrive, reducing humidity and leaf wetness is important. Maximizing planting distances, planting in areas of full sun and air movement, and watering at the base of the plant are cultural techniques that can help reduce moisture on or around the plant, and help reduce disease. Several basil cultivars resistant to downy mildew were recently released. However, even resistant basil plants are infected when conditions are conducive for the development of the disease. Dr. Babadoost reports that basil downy mildew is less virulent towards red or purple basil, which can be used as an alternative to the popular sweet basil.

Author:

[Diane Plewa](#)

[Travis Cleveland](#)

Choosing Grass Seed

How long does one take to purchase a new vehicle? It might take hours, maybe days or even months researching the features, comparing different brands, makes, models, engines, mileage, warranty, or test driving. The same thought and care should also be taken when choosing the seed for your lawn. Sounds crazy? It is not! This is the most critical investment in ensuring a high-quality turf that lasts.

When beginning your research for the right cultivars in the right place, checking out the national turf evaluation program is a good start. **The National Turfgrass Evaluation Program (NTEP)** is designed to develop and coordinate uniform evaluation trials of turfgrass varieties and promising selections in the United States. Test results can be used to determine the broad picture of the adaptation of a cultivar. Results can also be used to determine if a cultivar is well adapted to a local area or level of turf maintenance. These trials look at a variety of characteristics including color, disease resistance, drought tolerance, winter hardiness, traffic tolerance, and mowing height. This is a great step in determining what cultivars will do the best in your lawn.

Now that a variety has been chosen it is time to find the seed. When choosing a bag of seed, the Federal Law requires that the label must contain the following information. The trick is to understand what is the most critical as it can make the difference between a turf that will last and one that will not.

- **Name of Seller-** is just that, the name of the seller, and it is good to know if you choose to reorder.

- **Lot Number-** This will allow for traceability should there be a problem.
- **Seed Variety and Crop Seed Content-** Most labels will list the species present but most likely will name the variety as well. Be sure to check that the package does not state “variety not stated,” this means that it could be a species or cultivar that is not of the same quality. If Crop Seed Content on the label. This represents the percent by weight of all seeds identified in the container, which are grown as an “agricultural crop.” Agriculture grass crop species include redtop, bentgrass, timothy or orchard grass. These must be specified by name if more than 5% by weight. For example, if 1.5% is bentgrass, this would equate to 135,000 bentgrass seeds per pound of the actual seed. Be sure to keep crop seed content as low as possible.
- **The date the seed was last tested-** This is the date in which the seed was last officially tested. The older the seed, the more likely the germination percentage will decline
- **Purity Percentage-** This is the percent by weight of each grass variety and kind. For example, if a seed tag lists tall fescue as 95% pure, this equates to 95lbs of pure tall fescue seed per 100lb of seed. A caution is that purity is not an indication of quality as not all pure seed is capable of growth or maturity.
- **Germination-** Germination is the percent of pure seed that is capable of growth. This is determined under strict laboratory procedures within a certain time frame. It is critical to understand that since the conditions in the lab are near ideal, that if planting conditions are not ideal, then the percentage of seed that would survive will decline. The germination of seeds also declines with age. Be sure to check the date in which the seed was tested to ensure that the freshest seed is being purchased. Choosing the freshest and highest purity allows for the most excellent chance of high-quality turf. Both purity of seed and germination are components of seed quality and are used to determine Pure Live Seed (PLS). This is solved by the % of purity x % germination over 100. For example, the seed label states that the Kentucky bluegrass has a purity of 93% x 85% germination rate, this would mean that in a 100lb bag of seed that 79% is PLS. The percent that is closer to 100 would be a higher quality bag of seed.
- **Weed Seed –** This is the percent of the weight of all seeds in the bag that have not been identified as either pure seed or crop seed. Ideally, this number should be as low as possible, since even the smallest seed could be a pretty significant problem.
- **Noxious Weeds-** This is the number per pound of weed seeds. These weeds classified as noxious do vary by state. These seeds are considered undesirable because they can be challenging to manage, even with proven integrated pest management practices.
- **Inert Material-** The percent by weight of all material in the bag that will not grow. This material may include broken seeds, chaff, soil, wood shavings, or empty seed hulls. Inert material helps to add weight to the bag but provides no real value to the seed quality.



SQD QUALITY

**TALL FESCUE,
002 SHADE BLEND**

ID#: SQ8-233309-042 01.17.19
Lot #: L155M-18 - KB100219
Origin Oregon Tested in New York

108497

The Producer and/or vendor warrants that this is part of a seed lot which was inspected, sampled, and/or laboratory tested under the supervision of the New York Seed Improvement Project, and is solely responsible for the information herein and for the proper use of the label. This label must be accompanied by analysis data required by law.

Impartial Third Party Inspection provided by:
New York Seed Improvement Project
New York State College of Agriculture and Life Sciences, Cornell University, Ithaca, NY
NYS College of Agriculture and Life Sciences, Cornell University, Ithaca, NY
The Official Seed Certification Agency of the NYS Dept. of Agriculture and Markets

MEMBER OF ASSOCIATION OF OFFICIAL SEED CERTIFYING AGENCIES

ACME SEED SUPPLY
Springfield, NY

002 Shade Blend Net Wt: 25 lbs
Lot #: L155M-18-KB100219

Variety	Purity %	Germ %	Origin
Rowd / Tall Fescue	24.98	90	OR
Titanium 2LS Tall Fescue	24.92	90	OR
Valkyrie LS Tall Fescue	24.80	90	OR
GTO Tall Fescue	24.75	90	OR

Weeds %: 00 Other Crop %: 00 Inert %: .55
No noxious weeds Tested: 01/19 Sell by: 05/20

CERTIFIED SEED

MIXTURE OF CERTIFIED SEED

A PRODUCT OF Oregon
LANDMARK OF QUALITY

OREGON STATE UNIVERSITY
CORVALLIS, OREGON 97331

MEMBER OF ASSOCIATION OF OFFICIAL SEED CERTIFYING AGENCIES

L155M-18-KB100219
HF1FCOE4FOF07TSU
20181202172017AB1644
APPLICABLE: CM (61)1737-5113

Seed Labels on a Tall Fescue Blend Photo by Travis Cleveland

Seed labels might have a “blue” certification tag stating the product has been certified; this means that it has met specific standards of varietal purity. This certification only guarantees the authenticity of the variety. However, it does not imply any guarantee on the purity, germination, crop or weed seed content of the seed. Certification standards are more rigid; therefore, the percent of purity may be higher, and the weed or crop seed content should be lower. It is also free of prohibited noxious weed seeds.

Select seed based on the use of the area, evaluate the conditions of the area now and future use. Once this has been considered and a variety chosen, it is time to purchase seed. Remember price is not everything. Be sure to calculate price per pound of pure live seed this will give you a better idea of cost. The highest price seed does not necessarily equate to high-quality. Knowing how to read the numbers on the label and understanding the contents in the bag is what is critical for a lasting high-quality turf.

[Maria Turner](#)