

PLANT & PEST ADVISORY

LANDSCAPE, NURSERY & TURF EDITION \$1.50

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What's Wrong with Preemergence Crabgrass Herbicides?

Stephen Hart, Ph.D., Specialist in Weed Science

The last four years have been characterized by significant late-season crabgrass infestations in turf which have occurred even if the site was treated with preemergence (PRE) herbicides.

These observations have led many to question if PRE herbicides are losing their effectiveness for crabgrass control, which is likely not the case.

In order for a PRE herbicide to be effective it must be applied prior to crabgrass germination. Our general recommendation for central New Jersey is to apply Pre herbicides around April 15 to insure that adequate rainfall is received to activate the herbicides in the soil prior to crabgrass germination. However, the last four springs have all been characterized by below average soil temperatures in April and May, which leads to a delay in the crabgrass germination cycle. From 2001 to 2004, I noticed that significant crabgrass germination did not start until late May in established turfgrass sites. These weather patterns result in an extended crabgrass germination cycle, which may run into late July and August. In many cases, Pre herbicides will not persist long enough to control these later flushes of crabgrass.

The likelihood of late-season crabgrass infestations increases significantly if cool wet springs are followed by cycles of dry and wet weather for two reasons. Dry cycles thin and weaken the turfgrass stand making it less resistant to crabgrass infestation. Wet cycles stimulate crabgrass germination and leach the herbicide out of the crabgrass germination zone.

The best way to avoid summer infestations of crabgrass is to maintain a dense and vigorous turf and apply split applications of Pre herbicides. Split applications entail applying 50 to 66% of the herbicide in mid-April and a second application in early/mid June as opposed to applying a single application at the full rate in mid-April. Split applications can greatly increase control levels compared to single applications. One example of this is from our replicated research plots in 2004 where Dimension applied at 0.5 lbs ai/A in mid-April provided 60 to 78% crabgrass control in early August. These control levels were increased to 90 to 91% by applying split applications of 0.25 lbs ai/A in mid-April and again in mid-June.

Although split herbicide applications and maintaining a vigorous turf can greatly increase levels of crabgrass control, complete control can

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Asian Longhorned Beetle Update and Information

William T. Hlubik, Middlesex County Agricultural Agent

The Asian Longhorned Beetle (ALB) poses a serious threat to many common shade trees in New Jersey. We need your help in spotting and reporting the beetle to authorities. The primary infestation in Carteret was reported by a local resident that saw a news report on ALB and called the NJ Department of Agriculture's 1-866-Beetle-1 hotline. Upon follow-up on the report it was obvious that we had a serious infestation. Hundreds of trees had characteristic ALB damage and could have been active from 5 to seven years before being detected. That is why public education is so important. With the help of trained landscapers and tree professionals and homeowners throughout the state, we hope to eradicate this pest.

The hunt for ALB continues with field surveys in Carteret, Linden and Woodbridge. To date, 3,837 trees have been examined and 402 trees have been found infested with the beetle. It is estimated that approximately 20,000 trees will be examined for ALB. The core of infestation with trees showing 3/8 inch bullet shaped exit holes and egg sites remains about 1 square mile in size. The survey crew has grown to include USDA Animal Plant Health Inspection Service (APHIS), US



Asian Longhorned Beetle



Exit hole

Photos by James Marko, Rutgers Cooperative Extension

Forest Service, NJ Department of Environmental Protection, NJ Forest Service and the USDA Federal Grain Inspection Service. Currently 16 trained climbers are examining trees for ALB infestation. Climbers include smokejumpers from Montana, California, Idaho, Oregon and Washington, 2 climbers from USDA APHIS Program in Amityville, NY and 2 inspectors from NJ Department of Agriculture (NJDA).

Susceptible trees will be removed within a 1/4 mile radius of the core infestation. All infested trees with key symptoms will be removed. Trees removed in the quarantine zones will be chipped to 5/8 inch diameter or less. Several research studies have confirmed that chipping to 5/8 inch will prevent survival of larvae which require larger pieces of wood for completion of their life cycle. Note that anyone working in and around the established quarantine areas, such as the Medwick Park area in Carteret cannot move infested wood out of the area. If you have any questions call 609-292-5440.

Common hosts for the Asian Longhorned Beetle include: Maple, boxelder, Horsechestnut, buckeye, Willow, Elm, Birch, Planetree, Sycamore. Occasional hosts include: Mimosa, silk tree, Hackberry, Ash, Poplar and Mountain Ash. For a more complete list log on to <http://www.uvm.edu/albeetle/hosts.htm>

Rutgers Cooperative Extension, NJDA, and USDA APHIS have received and followed-up on many calls from residents responding to media and public outreach efforts. Rutgers Cooperative Extension of Middlesex County developed three, 30-second and 60-second public service announcements on the detection and reporting of ALB that have aired on NJN Public Television over the past two weeks. These PSA's have aired throughout the day and evening on NJN PBS. PSA's were developed to educate the public and enlist their support in the identification, tracking and reporting of ALB infestations. In addition, Rutgers Cooperative Extension of Middlesex County produced a 24 minute educational video on ALB that has been distributed and aired on nine central NJ Public Access Stations. The educational CD ROM: Wanted, The Asian Longhorned Beetle is available for teachers, nursery professionals and any group wishing to learn more about the Asian Longhorned Beetle. For a copy contact Bill Hlubik at Hlubik@aesop.rutgers.edu. The educational CD ROM includes PowerPoint slide shows with video clips. A longer 20 minute educational video is also on the CD ROM.

For more information on the Asian Longhorned Beetle go to our website at <http://www.rce.rutgers.edu/alb/> where you will find color pictures, factsheets in English and Spanish, educational videos and slide shows. If you spot the Asian Longhorned Beetle or characteristic damage such as the 3/8 inch bullet shaped exit holes on susceptible trees then call 1-866-Beetle-1 or 609-292-5440. With your help, we can stop this invasive pest from becoming a much more serious problem in New Jersey. □

Plant Diagnostic Laboratory Highlights

Richard J. Buckley, Laboratory Coordinator

Turf

Gray leaf spot has reared its ugly head! Historically, submissions of gray leaf spot to our laboratory peak on or around September 14, which proved to be the case again this year. In golf turf, the samples were submitted from courses in Morris and Bergen Counties. The most interesting thing, however, were the number of samples from residential lawns. It seems that the disease is quite manageable on golf turf, but overlooked by our landscape set. Mid-September also brought a couple lingering samples of **brown patch** from residential lawns and **summer patch** from golf turf. We often see a couple summer patch samples at this time of year as the preventive fungicide treatments made in mid-August wear off, but the stress on the turf doesn't. A couple samples of **take all** also wandered in this period. The take-all was from a Burlington County golf course. Last but not least, can't forget to mention the obligatory **anthracnose** samples! Only one this time – from California no less!

Ornamental grasses

Two very interesting grass samples submitted from nursery this week. A Monmouth County nursery submitted a sample of variegated hakone grass, *Hakonechloa macra*, which was diagnosed with **gray leaf spot**. After a modest literature search, the only references for gray leaf spot on this grass were written in Japanese, so we may have a new disease on our hands! Another interesting grass sample came from a Burlington County nursery. The grass was common cord grass, *Spartina alterniflora*, and the disease was **ash rust**. Ash rust, which is caused by the fungus *Puccinia sparganoides*, is a common leaf disease of ash. The fungus forms cup-like fruiting bodies, called aecia, on the undersides of leaves and petioles of susceptible trees during periods of cool, wet weather in spring. The aeciospores released by the fruiting bodies are subsequently windblown to the alternate host, which is *Spartina*. On *Spartina* striate leaf lesions erupt with fruiting bodies called uredia. The uredial stage of the fungus and its rusty colored spore masses were clearly evident on the sample we received. To kick things up a notch, the cordgrass also was infected with the fungus *Bipolaris sorokiniana*. This fungus causes **leaf spots**, **foot rot**, and **melting out** of many grasses, including turfgrasses. Of the two, the *Bipolaris* will cause the most damage.

Landscape

Samples of woody ornamentals from the landscape and nursery continue to be submitted to the laboratory with a myriad of leaf diseases and minor stem blights. Samples include: **anthracnose** on oak, maple, and birch (*Discula betulina*); *Pestalotiopsis* on arborvitae; *Kabatina* on juniper; *Blumeriella jaapii* on *Prunus*; *Cristulariella depraedens* on sugar maple; and a sample of holly with *Sphaeropsis* twig blight. Samples of red oak and pin oak with **bacterial leaf scorch** continue to be submitted to the laboratory. As for the insects, **cryptomeria scale** was identified on fir from two separate Christmas tree nurseries in Salem County; populations of **spruce spider mites** were surging on samples of spruce and fir from Bergen and Middlesex Counties, respectively; and **bronze birch borer** damage was found on birch samples from a Monmouth County nursery. □

New Factsheet Available

Now available on the web at www.rce.rutgers.edu or from your county Cooperative Extension office is the following new factsheet:

FS528 - "Management Recommendations on Cold Hardiness and Dehardening for Container-Grown Nursery Crops", authored by Dr. Gladis Zinati, Extension Specialist in Nursery Management. This is a four page fact sheet. □

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rarely be achieved. Frequent, heavy rainfall events in July/August, especially if they follow extended dry periods, greatly reduce the chances of achieving complete control. Turfgrass Professionals must be vigilant during these months to check for breakdown of Pre crabgrass programs and spot treat escapes with postemergence herbicides if complete control is desired. Seedling crabgrass (untillered) can be effectively controlled with Drive or Acclaim Xtra and Acclaim Xtra can control crabgrass up to 2 to 3 tillers in Kentucky bluegrass. In addition, both herbicides can be tank-mixed with residual herbicides to get through the remainder of the season. □

Editor's Note: This will be the last biweekly issue for the 2004 season. The remaining monthly issues for the season will be published in October and November.

Foliar Nematodes in Ornamental Plants

Ann B. Gould, Ph.D., Specialist in Plant Pathology

Foliar nematodes (*Aphelenchoides* spp.) are microscopic worms that live in leaf tissue and can cause significant injury to many ornamental plants. *Aphelenchoides* is one of several hundred nematodes species that attack plants. All plant pathogenic nematodes, including this one, have a special feeding structure called a stylet. Stylets help the animal penetrate plant tissues and are used to ingest the contents of plant cells. Nematodes reproduce by laying eggs; the juveniles go through several molts before they mature to adults. As a group, nematodes cause some extremely important diseases world wide; annual losses on crops such as grains, legumes, banana, cassava, coconut, potato, sugar beet, sugarcane, and sweet potato are approximately 11%.

Two common species of foliar nematode that attack ornamentals are *A. ritzemabosi* (the chrysanthemum foliar nematode) and *A. fragariae* (the strawberry nematode). Between them, these animals parasitize a number of woody and herbaceous perennials, many of which are in the families Compositae, Liliaceae, Primulaceae, and Ranunculaceae (Table 1). In addition, *A. fragariae* affects many ferns. Due to the loss of systemic insecticides in greenhouse and nursery production, foliar nematodes are becoming much more common in New Jersey.

Symptoms

In contrast to many plant parasitic nematodes that reside in the soil and feed on roots, foliar nematodes attack aerial plant parts. On young stems, leaves, and buds, external nematode feeding causes the new growth to curl, twist, and become stunted. Foliar nematodes can also penetrate plant tissue through open stomates and feed on the cells of the spongy mesophyll. As the nematodes feed and reproduce, affected tissue turns pale green, then yellow, and eventually brown. In some cases, severely affected tissue drops away, resulting in a "shot-hole" appearance.

Since foliar nematodes do not move easily through tightly packed cells or across leaf veins, affected tissues are usually bound by leaf veins. In plants with net-like veins, blighted areas often appear in an angular, "patchwork" pattern. In monocots, which have parallel veins, injured tissue appears in "stripes." Leaves infected by foliar nematodes may collapse or simply senesce prematurely. Unfortunately, some plants can be symptomless carriers of foliar nematodes, and, in many cases, nematode populations can become quite high before symptoms are expressed.

Disease Development

Foliar nematodes persist during dormant periods within infected plant parts. In general, populations of foliar nematodes are low in the winter and gradually increase throughout the growing season. Symptoms are expressed by early summer and intensify as the season progresses. Foliar nematodes rarely kill the host plant, but do contribute to an overall reduction in plant vigor. In some instances, nematodes can interact with bacteria and fungi, resulting in a serious foliar blight.

Since foliar nematodes require a film of free moisture to move across tissue surfaces, wet conditions favor disease development. Foliar nematodes are very tolerant of desiccation, however, and can remain viable in dried plant material for years.

Foliar nematodes are spread by splashing water and in vegetatively propagated plant material. In some hosts, nematodes crawl into flowers and are disseminated on infested seed. Since some plants may act as symptomless hosts and symptoms in other plants are not apparent until nematode populations are very high, spread of this nematode can be a threat whenever new plant materials are introduced into a garden, landscape, greenhouse, or nursery.

Diagnosis

Although the symptoms of foliar nematode infestations are often quite diagnostic, confirmation of the nematode in plant material must be done by laboratory analysis. Foliar nematodes are easily extracted from plant material by incubating suspect tissues

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Table 1. Reported hosts of foliar nematodes.¹

Woody plants and herbaceous perennials

Amaranthus tricolor
Anemone x hybrida
Azalea sp.
Baptista australis
Begonia sp.
Fragaria x ananassa
Hepatica sp.
Heuchera sp.
Hosta sp.
Hypericum sp.
Ipomoea sp.
Iris sp.
Ligularia sp.
Ligustrum sp.
Lilium sp.
Narcissus sp.
Paeonia sp.
Papaver orientale
Phlox sp.
Polygonatum sp.
Rhododendron sp.

Greenhouse foliage, annual, and bedding plants

Ageratum sp.
Anthurium andraeanum
Begonia sp.
Coleus sp.
Cyclamen persicum
Ficus sp.
Hibiscus rosa-sinensis
Impatiens sp.
Lilium sp.
 Orchids
Pelargonium x hortorum
Peperomia sp.
Saintpaulia ionantha
Salvia sp.
Sinningia sp.
Vanda sp.

Ferns

Asplenium nidus
Athyrium goeringianum
Blechnum sp.
Dryopteris sp.
Nephrolepis sp.
Polypodium sp.
Polystichum sp.
Pteris sp.

¹Compiled by E.M. Dutky (University of Maryland) and A. B. Sindermann (Maryland Dept. of Agriculture).

Landscape IPM Notes

Steven K. Rettke, Ornamental IPM Program Associate

✓ ALL MULCHES ARE NOT CREATED EQUAL:

Although the mulching of trees and shrubs is an important plant health care practice, their effects can sometimes produce unexpected consequences. Different mulching materials should influence supplemental fertilizer practices. Nitrogen fertilizers can be applied to help reduce nitrogen immobilization where wood pallet or hardwood bark is found. Alternatively, where plants are growing in composted mulches, nitrogen application rates need to be adjusted to avoid over-stimulation. Over fertilization, especially with high nitrogen, may decrease mycorrhizae.

It is most important to use these products when trees are first planted. If raw or fresh mulches are used, they are best applied in the late fall or winter in order to reduce their initial negative effects on plant growth and health. As soon as the organic matter is partially decomposed and the competition for nutrients begins among soil microorganisms, then the beneficial effects can begin.

Composted leaf and twig litter are best because they will support the growth of mycorrhizae. In natural forests where there is decaying leaf litter, the non-woody roots, and especially mycorrhizae, will be abundant in the highly organic top layer of soil. In cities, more composted wood and leaves should be added in *correct quantities* to soil about the base of trees.

✓ **BURL/KNOT GROWTHS ON TREES:** Some of your clients may be curious about the abnormal growth of knots or burls that occasionally are found on some trees. These mysterious aberrant growths often produce an ugly, distorted appearance and are usually found on certain deciduous trees. The actual cause of these burls is not fully understood, but they seem to be a genetic wound response.

The tree may receive only a relatively mild injury that initiates compartmentalization and callus tissues to form. However, this defensive mechanism within the tree does not seem to be able to shut itself off, resulting in a massive overgrowth of cells on stems or branches. Apparently, there are no pathogens or toxins involved, as is the case with the formation of witches' brooms. Often times the affected trees do not experience any decline and continue to grow.

✓ **LICHENS HARMFUL TO TREES/SHRUBS?** : The blue-green colored lichens growing on the bark of trunks and stems are the well-known mutualistic association between fungi and algae. Lichens have prolific growth when exposed to full sunlight. Sometimes clients may become concerned with lichen growth on their trees or shrubs, especially after crown thinning has opened up the canopy and the increased sunlight promotes further growth. Nearly all of the literature states that lichens are purely superficial and cause no harm to the health of

trees/shrubs. Interestingly, a few non-scientific studies have indicated that lichens may possibly have some detrimental health effects. For example, it has been postulated that lichens may disrupt gas exchange. Furthermore, these organisms have the ability to break down rocks and hence, it is suggested some damage to plants do occur. However, until replicated and controlled scientific studies prove otherwise, we should continue to reassure our clients that these curious growths on their trees/shrubs are of no concern.

✓ **HACKBERRY GALLS:** Hackberry (*Celtis*) is a common native plant found growing in open fields, along roadsides, and in many types of soil. It is admirable that this hardy genus is especially able to grow well in dry soils. However, over 10 types of gall-making insects attack hackberry foliage. A common one is the hackberry nipple gall, which causes small, oblong protrusions on hackberry that are pale green to red in color. These galls are raised from the leaf surface, somewhat shaped like a nipple. These are most prevalent on shrubby forms of hackberry. The hackberry blister gall, on the other hand, forms small round blister-like galls on the surface of hackberry. Adults of both of these species are psyllids, about 1/3 inch in length, black in color, and have a jumping habit.

Adults begin emerging in September and can continue to emerge well into the fall season. They can be extremely annoying to people, as they alight by the

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in water. In a short time, the nematodes swim out of infected plant material and can be identified with a dissecting microscope. For positive diagnosis of foliar nematodes, send whole plants to the Rutgers Plant Diagnostic Laboratory and Nematode Detection Service or your local Extension office for analysis.

Management and Control

Once foliar nematodes are established in the field, control can be very difficult. The best management strategy, therefore, is to exclude infested plant material from growing areas. Use only nematode-free planting material obtained from a reputable source, and place new plants in an isolated area to monitor plants for symptom development. Clearly, plants used for propagation should remain free of nematodes and must be strictly monitored. If symptoms do develop, destroy affected plants and remove all plant debris to decrease nematode spread. Do not place infected plant material on a compost pile, since the nematode may persist and be reintroduced at a later date.

Foliar nematodes are easily killed by heat. Soaking seed or infected plant parts in hot water at a temperature of 130 to 140°F for 10 to 15 minutes should "clean up" infections. At the present time, nematicides are not readily available for foliar nematode control. Prevention and good sanitation remain the most reliable management tools. For current management recommendations, contact your local County Extension Office. □

hundreds on cars, buildings, and other objects near large hackberry trees. They will overwinter inside of homes or in cracks and crevices of tree bark before becoming active again next spring. Eggs will be laid just as new growth emerges and then nymphal feeding will cause new galls to form. As is the case with many leaf galls, they are a curiosity to many, but rarely are chemical sprays warranted.

✓ **SQUIRREL DAMAGE:** Grey squirrels are notorious in the fall season for “attacking” red oak trees during the weeks prior to leaf drop. They litter the ground beneath trees with twigs less than ¼ inch diameter after chewing them off and letting them drop to the ground. Explanations regarding this sometimes-annoying squirrel behavior have been postulated. One possibility is that the squirrels are cutting branches to get acorns to the ground. Another reasonable likelihood is the squirrels will use the twigs and leaves for nesting materials. Chewing the twigs off the oak trees before the leaves drop will provide for better nesting since the leaves will continue to stay attached. These are a couple of educated guesses that some of your curious homeowner clients may find interesting. (*Reference: Cornell Extension Field Diagnostic Handbook, 8/01*)

✓ **RESISTANT HONEYLOCUSTS:** The Mimosa Webworm is a common pest of honeylocust, causing webbing of foliage and defoliation. Infested trees appear scorched and unsightly. The cultivar ‘Sunburst’ is extremely prone to mimosa webworm attack, while the cultivar ‘Morraine’ is more susceptible to the honeylocust plantbug than is ‘Sunburst’ or ‘Imperial’. These differences stress the need to know the key pests on a site prior to planting, and for increased use of resistant varieties. (Source: Bastian and Hart, J. Econ. Entm. 83(2):90)

✓ **BUG ZAPPERS CAN SPREAD BACTERIA:** According to researchers at Kansas State University, insect electrocution traps cause insects to explode upon contact, and the millions of bacteria on their legs and bodies are scattered through the air up to 6 feet. Since the bacteria are often obtained from human or animal feces, bug zappers potentially can spread infectious diseases. Insects examined in this laboratory study included moths and flies. Previous research has proved that bug zappers produce airborne insect particles after insects are electrocuted. As a result, the FDA has restricted the use of these devices to not more than 3 feet above the floor and no closer than 5 feet from where food is handled. Additional research has shown that bug zappers kill more beneficial insects than nuisance or pest insects. The bottom line: Do you really want that bug zapper over your picnic table? (*Reference: Amer. Nurseryman, 6/1/99*)

✓ **BAGWORM DISPERSAL:** Bagworm densities appear to have been relatively high this past season within many areas of the state. Most of the observed populations on conifers have already or are preparing to pupate. During the next few weeks mating and egg laying will occur within the female sack. Bagworms hatch out in mid-June from the overwintering eggs within the dead female bag. Researchers in Kentucky have determined that most newly hatched bagworms disperse away from

the ‘parental’ host plant. This may be because the offspring from only a few bags have the potential to defoliate a small plant. About 75% of immature bagworms disperse by ‘ballooning’ into the wind, traveling up to 245 feet. Failure to control populations upwind from a susceptible host may leave a potential reservoir of the pest in the future. (*Reference: Cox and Potter, J. Arbor. 9/90*)

✓ **HEMLOCK WOOLLY ADELGID & TREATMENT LIMITATIONS:** The autumn season is an excellent time to control this hemlock pest, if no controls have been applied to date. The adelgid nymph is exposed on the underside of new growth, at the base of individual needles from May through early November. By November, it begins to cover itself with the white, woolly wax. Information from the US Forest Service indicates that hemlocks that have experienced over 50% needle loss from the adelgid will not recover in subsequent years (even if treated). Therefore, it is important that treatments be made when the needle loss is below 50% if hemlocks are to recover or survive. Fall treatments of insecticidal soaps, horticultural oils, or Merit are very effective. Excellent spray coverage is required with soaps or oils. When using Merit drenches, be certain adequate soil moisture exists.

✓ **THE MAGNIFYING HAND LENS IS AN ESSENTIAL TOOL:** Of the many helpful tools that an IPM scout uses, arguably the most important may be a magnifying hand lens. Improving the abilities of the eyes to see the tiny world of insects and disease organisms will improve IPM decision-making in the field.

A hand lens is a tool that magnifies the small area of interest and can conveniently be placed in a pocket or worn around the neck, where it is always handy. Landscape pest managers *not* routinely using the aid of a hand lens are working at a great disadvantage. Once it is discovered how valuable the proper use of a hand lens is when monitoring, it soon becomes an indispensable tool.

Since the early detection of a plant pest is important in any IPM program, the use of a hand lens enables the pest to be detected before obvious damage appears on the plant. Also, the pest population can more readily be evaluated when magnification is used.

✓ **FALL SEASON SPIDER MITES:** Spruce mites and Southern Red mites are the common cool season mites that increase their activity during the fall months. When daily high temperatures consistently fail to exceed 85°F, then both of these mite species end their summer inactivity and eggs begin to hatch and be laid. Their peak populations occur during October and November. Generally, by December, most overwintering eggs have been laid on leaves, needles and twigs. With magnification, the clear or reddish-orange bubble shaped eggs of spruce mites on conifers can be observed. The overwintering eggs of Southern Red mites are a bright red color and are easily observed on the undersides of broadleaf evergreens without magnification. Horticultural oils can be very effective at suppressing both eggs and active adults. Be aware that oils will remove the blue coloration on conifers that will not reappear for at least a year. □

Diseases of Turfgrass

Bruce B. Clarke, Ph.D., Specialist in Turfgrass Pathology

Stem and Crown Rust

These diseases are prevalent on susceptible Kentucky bluegrass and perennial ryegrass cultivars, respectively, at this time. As rust intensifies, affected turf prematurely yellows and orange pustules called uredia (reproductive structures) appear on leaf blades. To control both stem and crown rust, maintain adequate fertility and soil moisture, and apply Banner, Bayleton, chlorothalonil, Compass, Eagle, Heritage, Insignia, or mancozeb per manufacturer's recommendations.

Stripe Smut

This disease, caused by the fungus *Ustilago striiformis*, will soon develop on sensitive Kentucky bluegrass varieties. Symptoms typically appear as long black streaks (striations) between the veins of infected blades. These areas eventually rupture releasing abundant black smut spores. Research at Rutgers has shown that one well-timed application of a systemic fungicide in early to mid-October offers excellent control and is, therefore, far superior to multiple applications in the spring (mid-May). For best results, apply Banner, Bayleton, Cleary 3336, Eagle, Fungo, or Rubigan, now per manufacturer's recommendations.

Take-all patch

This disease, caused by the root and crown infecting fungus, *Gaeumannomyces graminis* var. *avenae*, may redevelop on bentgrass greens and fairways during the next few weeks. Although this disease is most prevalent from April through June, late-summer and fall outbreaks are not uncommon. Infection takes place during cool, wet weather and symptoms are most striking after stress.

Infected grass first appears bronze to reddish-brown in color and then fades to a dull brown. Patches are usually circular or ring-shaped and range in size from several inches to two feet or more in diameter. The centers of affected turf are frequently colonized by bluegrass (*Poa* spp.), fescue (*Festuca* spp.), or weed species. Upon close examination, decaying roots and leaf sheaths appear black and dark strands of mycelium often develop parallel to the root axes.

The disease is enhanced by poorly drained, light-textured, and high pH soils. Although take-all is difficult to control, best results have been achieved through the use of acidifying fertilizers during cool weather (e.g., ammonium sulfate) and preventive applications of Banner, Bayleton, Heritage, Insignia, or Rubigan in October and November. If the disease has been particularly severe, fungicides should be reapplied twice next spring at 21 to 28-day intervals beginning in early April. Chemicals should be applied in 4 gal water/1000 sq ft or irrigated into the root zone (1/8 to 1/4" of water) for maximum effectiveness. Whenever practical, overseed infested areas with less susceptible grasses such as fine fescue, Kentucky bluegrass, or perennial ryegrass to mask symptom expression. Maintain soil pH at approximately 6.0 since the disease is enhanced in alkaline soils. The use of manganese (2 lb Mn/ A applied as manganese sulfate or another water soluble source) has been shown to reduce symptom severity on sites deficient in this nutrient.

Turf Expo

This year's Turf Expo will be held at the Trump Taj Mahal Casino/Resort on December 7-9, 2004. This is an excellent opportunity to receive the latest turf management information from nationally renowned speakers. For additional information, please contact Dick Caton at (856) 853-5973. □

Weather Summary for the Week Ending 8 am Monday 9/13/ 4

WEATHER STATIONS	RAINFALL			TEMPERATURE				GDD BASE50		MON %FC
	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	
BELVIDERE BRIDGE	2.18	28.73	2.57	84	50	69.	5	2725	332	91
CANOE BROOK	2.78	31.73	4.28	85	54	70.	5	2792	374	94
CHARLOTTEBURG	1.97	29.26	1.54	81	48	67.	5	2561	639	93
FLEMINGTON	1.20	33.48	7.17	83	51	69.	4	2774	293	78
LONG VALLEY	missing									
NEWTON	1.28	27.30	1.73	81	52	67.	5	2555	380	83
FREEHOLD	.52	26.22	.61	85	51	70.	3	2950	324	73
LONG BRANCH	1.01	27.37	1.42	84	56	70.	3	2775	207	71
NEW BRUNSWICK	.69	27.85	1.89	85	53	71.	4	2947	183	75
TOMS RIVER	.11	27.81	1.29	84	52	71.	3	3038	467	33
TRENTON	.42	25.31	.72	84	52	71.	3	3016	151	53
CAPE MAY COURT HOUSE	.03	20.94	-2.02	82	55	71.	1	2908	332	27
DOWNTOWN	.00	22.64	-1.54	85	51	71.	3	3104	229	50
GLASSBORO	.33	36.88	11.56	86	57	73.	5	3135	283	59
HAMMONTON	.63	25.45	.14	86	52	72.	4	3210	357	61
POMONA	.28	22.28	-.86	84	52	72.	5	3069	407	42
SEABROOK	.03	27.67	4.46	85	56	73.	4	3405	514	45
SOUTH HARRISON	.21	27.86	2.98	83	57	72	NA	3239	NA	NA
WES KLINE — GDD BASE 40 PINEY HOLLOW	Last Week 219 (Ending 9/6/04) This Week 219 (Ending 9/13/04)									

Pesticides and Storms

What to do About Your Pesticides Before a Storm

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Hurricanes and similar storms, including flooding and tor-nadic winds, can wreak havoc with agricultural operations. In addition to the disastrous effects that spring to mind, such severe weather events can cause both dollar loss and environmental pollution with respect to agricultural chemicals. Fertilizers, pesticides, solvents, fuels, etc. can be contaminated, physically lost, or contaminate the surrounding environment and environments "downstream" of chemical storage and use areas.

If the time comes, you need to have a plan ready and know when to implement it. Here is some guidance that can be applied to any situations where pesticides and other chemicals are used and stored, e.g. farms, golf courses, mosquito control operations, nurseries, greenhouse operations, pest control firms, etc.

- **Be aware** of weather predictions on the morning, noon and evening news casts.
- **Do not delay** action. You need to take action EARLY to prepare for the potential of the hurricane now on the weather screen. And remember, others can follow.
- **Do an INVENTORY** of what pesticides and other chemicals you have on hand. Such an inventory will be useful for insurance purposes, or in the event of necessary pesticide or chemical clean ups. Include product and active ingredient names, and container sizes in your inventory. Receipts for the purchase of these materials are useful for this, or in some cases may suffice themselves.
- **Do the inventory NOW**, before you take other measures. Put the inventory in a safe location. In the case of large scale storms or flooding, it may be useful to make a copy of your inventory and mail or fax it to a friend or business associate who lives outside of the potentially affected area.
- **Do you know** where your INSURANCE policy is? Do you know exactly what kind of coverage you have? Does it cover your chemical inventory or the damage it could cause? Find out NOW. If you need to know later, your insurance agent may be very busy.
- **Consider not using** or making applications of agricultural chemicals, or at least holding off, until the potential of impending severe weather is resolved.
- **Delay purchase** or delivery of additional chemicals to your operation until after any impending storm risk is

past. If you have any such deliveries scheduled for the coming week you may want to cancel them.

- **Secure all** of your chemicals. This includes fertilizers, pesticides, solvents, fuels, etc. Close and secure container lids, move containers and application equipment to the most secure location. Raise chemicals from the floor or cover materials that could be damaged by water. Do what you can to protect product labels and labeling. Doors, windows and other points of access to storage locations should be secured and locked. If you are going to board up windows on your house, do the same for pesticide and other chemical storage areas. Don't leave chemicals in vehicles, or in application equipment.

- **As you prepare** for a storm, as you hurry to put lots of things into secure locations, be sure all of these items are compatible. Don't, for instance, put pesticides and fuels in the same building with animals, or animal feeds.

- **NOW is the time** to read the storage and spill containment sections of your MSDSs. Round up your pesticide and other chemical MSDSs and put these in a secure location. And if you have not done so, provide local emergency first responders with a copy of these, along with a copy of your chemical inventory.

- **Secure your personal** protective equipment. You may need it as part of your own cleanup operations after the storm.

- **Be sure** that your buildings will stay where they are as much as possible! Are the roofs tied into the building? Can you tie down small storage buildings and storage tanks?

- **If you leave** your location during a severe weather event, be sure that buildings that store pesticides and other chemicals are well signed.

- **Have on hand** all emergency phone numbers you need.

- **Consult your chemical** dealer and insurance agent for additional suggestions, but do it soon.

- **Sit down NOW** and think about what you need to do to prepare for a storm. Think about what kinds of things you will need and may need to do after a storm. Write it all down. Get family members and others in your operation to help with this. They may need to help later.

- **You may also** want to read the publication "Storm-Damaged Agrichemical Facilities" (University of Florida) available on the web at: http://edis.ifas.ufl.edu/scripts/htmlgen.exe?DOCUMENT_PI007. This fact sheet provides guidelines useful for persons or organizations needing to secure pesticides and other agricultural chemicals that have been subjected to severe storm conditions.

*Submitted by Rick VanVranken, Atlantic County
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Pesticide User Responsibility: Use pesticides safely and follow instructions on labels. The pesticide user is responsible for proper use, storage and disposal, residues on crops, and damage caused by drift. For specific labels, special local-needs label 24(c) registration, or section 18 exemption, contact RCE in your County.

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