

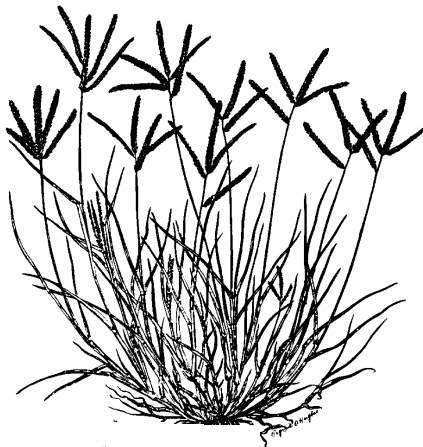
PLANT & PEST ADVISORY

LANDSCAPE, NURSERY & TURF EDITION \$1.50

JUNE 3, 1999

Deer Ticks Peak in June

Deborah Smith-Fiola, Ocean County Agricultural Agent



The relatively cool spring has extended the activity period for the northern deer tick (now known as the black legged tick), the vector of Lyme Disease. Because of the 2 year life cycle of this tick, last year's overwintering larvae have recently molted into the immature nymph stage. Nymphs are primarily active in late May and June. The majority of all Lyme disease cases (>70%) are the result of the bite of a nymph, usually this time of year.

The deer tick nymph is the size of a poppy seed. It is the only tick found in New Jersey with a black head and a black dorsal shield behind its head. Before feeding, the abdomen is creamy white and translucent. After a blood meal, however, the abdomen darkens and swells. It takes 3 to 4 days for a nymph to finish feeding on an animal and completely engorge with blood - whereupon it swells to the size of a mustard seed, and drops off the host. This is how deer tick populations spread: they hitch a ride on an animal host, such as a bird, feed for a few days, then drop off wherever that bird, for example, may have flown.

Not every tick carries Lyme disease. Nymphs needed to pick up the disease from an infected animal when they were a larva, in order to transmit it as they currently feed. The infection rate thus varies annually, typically from 10% to perhaps 25%-30%. (Note that adult ticks have a higher infection rate). Even if infected, research shows that the deer tick still must feed at least 24 hours to transmit the disease bacteria from its body to yours. Translated: this means that approximately one out of four ticks may be infected, and able to transmit Lyme disease - if it feeds more than a day. So the trick is to remove ticks as soon as possible!

Remove ticks only with tweezers. Bent, 'needle-nose' tweezers are preferred. Other methods, including using your fingers, petroleum jelly, a hot match, etc. may traumatize a tick - and a traumatized tick is likely to regurgitate its' gut contents, which may include the Lyme disease bacteria.

Deer ticks are now known to transmit other, less common diseases. HGE, or Ehrlichiosis, identified since 1984, was diagnosed in 8 people in New Jersey last year, with 2 deaths. Suspect Ehrlichiosis if you have Lyme-like symptoms (fever, fatigue, chills, headache, muscle pain) early in the day, but by evening symptoms are severe, to the point of entering the hospital. The diagnostic

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'bull's eye' rash (2 inches or more), is only a symptom of Lyme disease (and also 'Lyme-like' disease, vectored by the Lone Star tick). Deer ticks may also be co-infected with both HGE and Lyme Disease. Babesiosis is another relatively rare disease vectored by ticks. See a doctor or medical professional if you exhibit symptoms of Lyme Disease or any other tick borne disease. Also be aware that a Lyme disease vaccine is now available, but 3 doses are required for protection.

Research shows that 85% or more of nymphs are found in the woods, typically from ground level to 4 - 6 inch high vegetation. This location affords them the best likelihood of finding a small animal to feed upon. Ticks don't fly, they don't jump, and they don't fall from trees. They find a host by crawling up low vegetation and *waiting* for an animal to walk by - then they grasp onto the skin/clothing, and crawl up. Knowing this, beware of walking in tall grass or the shrubby undergrowth in the woods. Widen trails to 6 feet or more, to avoid brushing against vegetation. Some homesites will clear-cut or mow the shrubby understory layer of the adjacent forest to somewhat reduce the tick potential, but this has to be repeated annually.

Only 4% or so of deer tick nymphs are found in the lawn. Turfgrass that is maintained at the recommended 3 -4 inch mowing height is too hot and dry an environment for the immature tick. Turfgrass areas in full sun are thus a low priority for tick treatment. Instead, focus treatments to a barrier 10-ft. or so into the woods, and a barrier treatment along the edge of the woods (where the forest meets the lawn or landscaped beds). Pesticide treatments targeting nymphs need only be applied once, in late May or early June. Granular insecticides have shown superior control (> 90%) in research trials. Apply granular materials with a chest mounted cyclone spreader. Labeled insecticides include carbaryl (Sevin), Permethrin, chlorpyrifos (Dursban), Diazinon, and Tempo 2. Note that successful treatment of nymphs will not prevent the larval or adult stages of the tick, because of the 2-year life cycle. Damminix, a product that provides insecticide-laced nesting material to mice, is also available for use in conjunction with other control tactics. (Note that liquid insecticide treatments are most appropriate for adult tick control in November and/or April, after leaves drop from trees/before foliage appears on trees. Control levels >95% have been documented).

For more information, call your county Cooperative Extension office, and ask for a copy of the free recently updated fact sheet, 'Prevent Tick Bites: Prevent Lyme Disease' (FS 443). □

Diseases of Turfgrass

Bruce B. Clarke, Ph.D., Turf Plant Pathology

Brown Patch

Begin preventive control measures now to suppress this destructive summertime disease caused by the fungus *Rhizoctonia solani*. For best results, avoid heavy applications of nitrogen fertilizers during hot, humid weather, water in the early morning hours (12 midnight to 8 AM), and apply Banner, Chipco 26019, Cleary 3336, Curalan, Daconil, Eagle, Fungo, Heritage, mancozeb, Manicure, prostar, Sentinel, Thalonil, or Touche, on a preventive basis in areas with a previous history of brown patch.

Dollar Spot

This disease, caused by the fungus *Sclerotinia homoeocarpa*, has been very active on greens and tees. To prevent **dollar spot** from causing damage on susceptible turf again this year, maintain adequate nitrogen fertility, water in the early morning hours, reduce thatch, avoid the sole use of any fungicide for prolonged periods of time (to reduce the possibility of fungicide resistance), and apply Banner, Bayleton, Chipco 26019, Curalan, Daconil, Eagle, mancozeb, Manicure, Rubigan, Sentinel, Thalonil, Touche, or Vorlan per manufacturer's recommendations. Repeat fungicide applications as needed through mid-October.

Turf Field Days

Mark your calendars now for this year's Rutgers Turfgrass Research Field Days. The **Landscape Turf Research Field Day** has been set for July 29, 1999 at the Plant Science Research Farm in Adelphia, NJ. Registration will begin at 8:00 AM. Guided field tours will commence at 9:00 AM and will conclude at 3:30 PM, "rain or shine". The **Golf Turf Research Field Day** will be held on August 5, 1999 at the Turf Research Farm (Ryders Lane) in North Brunswick, NJ. This event starts at 12:30 PM (registration); field tours will run from 1:30 to 5:00 PM. Registration cost for each day is \$20 (\$30 with lunch on July 29). Recertification credits will be available at the conclusion of each program. Call (732) 932-9400 Ext. 339 for further information or directions. □

Tospoviruses in Greenhouse Crops

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

Greenhouse growers in New Jersey may be familiar with two virus diseases that affect a variety of ornamental and vegetable crops. These viruses, the **tomato spotted wilt virus (TSWV)** and its close relative the **impatiens necrotic spot virus (INSV)**, belong to a group known as **Tospoviruses**. The twelve viruses included in the *Tospovirus* genus cause diseases of significant economic importance on a worldwide scale. Crops most notably affected by these viruses include ornamentals, vegetables, tobacco, and peanuts. In New Jersey, TSWV and INSV are a serious threat to over 200 ornamental and vegetable species and have caused devastating losses to these crops in greenhouses.

TSWV was first reported in Australia in 1915 and was for many years considered the only virus of its type. During the 1980s, this virus severely affected tomato, tobacco, and peanut crops in the southeastern United States, Europe, and South America. By the late 1980s, a new virus similar to TSWV was discovered. This virus, INSV, caused severe losses in the floral crop industry throughout the United States and Europe. Within the last decade, more members of the *Tospovirus* genus have been described, some of which affect peanuts in India, cucurbits in Japan and Taiwan, and vegetables and ornamentals in the Brazil, Israel, and the US.

Symptoms

Symptoms of diseases caused by TSWV and INSV vary greatly because so many species of greenhouse crops can be infected with the viruses. In general, very young plants (less than six weeks of age) infected with these viruses may decline and die rapidly. In older plants, symptoms appear as mottling, vein clearing, wavy lines, concentric rings, and distortion of leaves, purple lesions on stems, color break on flowers, and stunting and death of entire plants. Ultimately, symptom expression depends on growing conditions, and the species, age, and health of the host plant. Symptoms caused by TSWV and INSV can often be confused with symptoms caused by other viral, fungal, or bacterial plant pathogens or by environmental (abiotic) disorders or injury.

Host Range

Many of the 200-plus plant species known to harbor the TSWV and INSV viruses are ornamental bedding plants, cut flowers, potted crops, and perennials. These hosts include: ageratum, African violet, amaryllis, anemone, aster, begonia, calceolaria, calendula, calla lily, campanula, Christmas pepper, china aster, chrysanthemum, cineraria, coleus, colum-

bine, cosmos, cyclamen, dahlia, delphinium, dusty miller, exacum, evening primrose, forget-me-not, gaillardia, geranium, gerbera, gladiolus, gloxinia, gypsophila, hydrangea, impatiens, lobelia, lupine, marigold, morning glory, nasturtium, New Guinea impatiens, nonstop begonia, peony, petunia, phlox drummondi, poppy, primrose, ranunculus, Rieger begonia, salvia, sinningia, snapdragon, stephanotis, stock, tiger lily, verbena, zinnia.

Vegetables known to harbor these viruses include bean, cauliflower, celery, cowpea, cucumber, eggplant, endive, lettuce, pepper, potato, spinach, and tomato. Weed hosts include bindweed, burdock, buttercup, chickweed, clover, jimsonweed, lamb's quarters, morning glory, nightshade, pigweed, shepherd's purse, and wild tobacco.

Transmission

Tospoviruses are spread by insects called thrips (thysanoptera: thripidae). TSWV and INSV are spread in New Jersey greenhouses by two species of thrips, western flower thrips (*Frankliniella occidentalis*) and onion thrips (*Thrips tabaci*). Thrips larvae acquire the virus by feeding on infected plants. The virus multiplies in the insect and is transmitted to healthy plants by the adult thrips, which remains infective its entire life. Plants begin to show symptoms 5 to 14 days after becoming infected.

Management

There is no cure for plants once they become infected with TSWV or INSV. Since *infected plants must be destroyed*, the best control for these virus diseases is *prevention*.

- Inspect all incoming stock for thrips and symptoms of disease. To check for thrips, shake plants over a white piece of paper or cloth. If possible, keep in-coming stock separate from existing stock until you are certain the new stock is free of both thrips and disease.
- Remove and destroy all infected plants since they cannot be cured and can serve as a source of inoculum to other plants.
- Keep seed and vegetatively propagated plants separate. Although these viruses are not transmitted through seed, they can be spread by taking cuttings from infected plants.
- Try to control or break thrips infestations between the fall and spring.
- Because many weeds harbor both thrips and virus, eliminate and discard weeds both inside and outside the greenhouse.
- Continually monitor thrips populations on a weekly basis with sticky cards. One to three sticky cards should be placed just above the plant canopy per 1000 square feet of bench space. Place other cards near vents and doors. Control thrips as warranted.

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Landscape Plant Health Care Philosophies and Practices

Jim Willmott, Camden County Agricultural Agent

Healthy plants are essential for achieving both aesthetic and functional objectives in landscapes. However, ornamental plants and turf are frequently challenged by insects, infectious pathogens, weeds and physiological problems related to site conditions. Currently, there are several philosophies relating to management of plant health. Each relies on cultural inputs such as fertilization, irrigation, cultivation, and the application of pesticides to maximize plant health. Let's consider the most commonly practiced philosophies regarding plant health care.

For the past few decades, plant health care relied heavily on application of synthetic chemicals for pest problems and fertilization. Often chemical applications were scheduled by the calendar, regardless of plant needs. Synthetic chemicals offer an economical and reliable means of maintaining plants. This is the conventional method. In many cases, however, the real or underlying causes of plant health problems are neglected. Recently the environmental and health implications of synthetic chemicals have come into question. Concern has prompted interest and adoption of alternative methods including those based on organic and integrated pest management (IPM) philosophies.

Organic methods have been practiced for centuries. Up until World War II synthetic pesticides and fertilizers were limited. As such, horticulturists relied heavily on organic practices. Generally organic programs use natural organic products for fertilization and pest management. The key word is "natural". By strict definition, organic simply means something containing carbon. Diazinon, Roundup and most pesticides are organic, but they are synthetic. Organic plant care is limited to the use of naturally occurring fertilizers and pesticides containing carbon. Manures are examples of organic fertilizers. Pyrethrum and nicotine are examples of organic pesticides. Some organic practitioners also utilize naturally occurring inorganic products like sulfur, for disease control, and minerals like potash or rock phosphate for fertilization. Also, some use biological pesticides such as entomopathic nematodes, fungi (Naturalis -T/O) or bacteria (milky spore).

Some presume natural organic approaches are "safer" for humans and the environment. It is, however, a mistake to generalize that synthetic chemicals are more hazardous than natural organic chemicals.

There are infinitely more naturally occurring toxic chemicals than synthetic. In fact, nature produces some of the most toxic chemicals known. Nicotine is natural and yet it is one of the most toxic insecticides produced. According to Dr. Bruce Ames of the University of California, 99.99% of all ingested carcinogens are natural.

Perhaps the greatest environmental benefit of organic methods is the recycling of waste. Production of composts and utilization in landscapes reduces solid waste.

Integrated pest management (IPM), is the most contemporary plant health care practice. Its conception dates back to the early 1970's. IPM often includes tactics commonly used in both conventional and organic methods. Like the conventional philosophy, IPM allows for the use of synthetic chemicals. However, use is optimized through frequent observations, or scouting, of plant health and pest populations. Early detection, delineation and quantification of pest populations often minimize pesticide inputs. Furthermore, once a plant health problem is detected, a comprehensive strategy is implemented to prevent reoccurrence in the future. All available alternatives must be considered. Simply scouting and treating with pesticides, without examining the underlying causes and employing a comprehensive strategy should not be considered IPM. Because of its holistic nature, IPM is often misunderstood, but when it is practiced properly, it results in the most environmentally, socially and economically sound plant culture. □

Sludge Products Containing Lime

Joseph R. Heckman, Ph.D., Soil fertility

Limed-sludge products are being used in many areas of New Jersey as soil amendments. These products are of greatest benefit when used to neutralize the acidity of low pH soils. Heavy applications of limed-sludge have in some instances resulted in excessive soil pH elevation and manganese deficient crops. Sandy soils are especially vulnerable to overliming and to manganese deficiency. Beneficial use of limed-sludge products requires the same attention to application rates as traditional liming materials. The application rate of any liming material should be based on the calcium carbonate equivalent as listed on the product label and the soil test recommendation. Refer to Rutgers Cooperative Extension Fact Sheets 635, 767, 902, 903, 904, and 905 for further information about liming and soil pH management.

In New Jersey, to obtain a free copy of any Rutgers Cooperative Extension Sheets, contact your local County Cooperative Extension office or otherwise, write to the Publications Distribution Center, Cook College, Rutgers University, 57 Dudley Road, New Brunswick, NJ 08901-8520. □

Extension for Greenhouse & Nursery Film Collection Program

The 1999 Greenhouse and Nursery Film Collection Program was scheduled to expire on June 1, 1999. In order to accommodate growers who will not be able to remove their greenhouse or nursery film by June 1st, the NJ Department of Agriculture announced that the collection program has been extended. Film from New Jersey growers will be accepted until June 15, 1999. If you have any questions on the program, film bundling guidelines or information on the collection sites, contact Karen Kritz at (609) 984-2506. □

Eastern Pine Looper Active

Deborah Smith-Fiola, Ocean County Agricultural Agent

For those living, working, or driving through the Pinelands area, the Eastern Pine Looper is quite active. Moths are flying at dawn and dusk (they are nocturnal, but noticed before sunset and early in the morning). They appear as ash gray to smoky gray moths, with a wingspread of about 1 1/2 inches. They will be laying their eggs on the current years' growth, between now and mid to late June. Young larvae shred the needles, and older larvae can defoliate. Defoliation won't be noticed until early fall. Last year, close to 350,000 acres were defoliated in the Pinelands by the pine looper and another pest, the pine needle miner (figures provided by John Kegg, NJ Dept. Ag).

For further information on the Eastern Pine Looper, contact Rutgers Cooperative Extension of Ocean County at 732-349-1246 for an info sheet on the pest. □

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Diagnosis

Positive diagnosis is made by submitting plants with suspicious symptoms to a disease clinic, such as the Rutgers Plant Diagnostic Laboratory, capable of running special chemical tests. A separate test is necessary to detect each virus.

Plant Diagnostic Lab Submission Forms for Commercial Growers (Nursery, Greenhouse, Field etc.) are available from your County Cooperative Extension office, or by calling the Lab at 732-932-9140. The form is also available from Rutgers Cooperative Extension's fax-back system. Call FaxInfoLine at 732-932-6767 and request document 3604.

Source: Moyer, J. W., German, T., Sherwood, J. L., and Ullman, D. 1999. *An Update on Tomato Spotted Wilt Virus and Related Tospoviruses*. APSnet, *Plant Pathology On-Line Feature article*, April 7 through April 30, <http://www.scisoc.org>. □

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