# FRONTIERS
## OF PLANT SCIENCE

FALL 1987
Volume 40 No. 1

Questions about insects, ticks, spiders, and small mammals.
See page 4.

A huntsman spider found in a sealed carton shipped to Connecticut

THE CONNECTICUT AGRICULTURAL EXPERIMENT STATION NEW HAVEN

**Figure 1. Lockwood Farm of the Connecticut Agricultural Experiment Station in Hamden.**

# Lockwood Farm and research: a will provides a way to advances

**By Paul Gough**

Although I had visited Lockwood Farm several times for the Experiment Station's annual Plant Science Day open houses in August, it was only after I began working at the Station that I learned that Lockwood Farm is named after William Raymond Lockwood, a Norwalk resident who willed his estate to The Connecticut Agricultural Experiment Station "to use and apply all the balance or net income in the promotion of agriculture by scientific investigation and experiment, and by diffusing a knowledge of the practical results thereof...." There is, however, little information about this man whose generosity had such a strong influence on the Experiment Station and its contributions to agriculture.

The bequest included 56 acres of land with buildings in South Norwalk near the Darien town line. The property was sold in 1900, and the Lockwood Trust was created to carry out the terms of the will. His house, built around 1800, still stands.

The day Lockwood died, June 10, 1898, the *Norwalk Gazette* said he "was a man of large inherited wealth which he cautiously but kindly conserved. He loaned large amounts of money and to many people, but he was never known to treat a creditor (I think the writer meant debtor!) harshly or unjustly."

The obituary described Lockwood as a "conspicuous figure of study, roseate: healthy although well along in years....always cheerful, courteous and friendly, true and helpful to friends and having no enemies...."

Station Treasurer William H. Brewer wrote in his report for 1900 that "Mr. Lockwood was a frequent attendant at annual agricultural conventions held by the State Board of Agriculture and was familiar with all the facts relating to the original establishment of the Station....was reasonably familiar with the actual work of the Station and its results, and had often expressed his commendation." Brewer promised a biography of Lockwood in the next annual report, but it was never published.

The only explanation for the bequest was written years later by E.H. Jenkins, the Station's third director. Jenkins wrote: "A favorite son of Mr. Lockwood, while a student in the Sheffield Scientific School (where Brewer taught), had a sudden and violent illness and Professor Brewer had taken immediate and devoted care of him". Although the son died, Jenkins said, Lockwood "thereafter showed a great gratitude to Brewer and this may have somewhat influenced him in making this gift to an institution in which Brewer was intensely interested and with which Mr. Lockwood himself was quite familiar. He had not, however, ever spoken of his intention with Brewer who was as much surprised at the bequest as the rest of us."

Regardless of why Lockwood created the endowment for the Station, some of the proceeds were used to purchase the land for what is now Lockwood Farm in Mt. Carmel. Over the years, many Station scientists have headed north on Whitney Avenue towards Lockwood Farm to put into practice in the field what they learned in the laboratory.

Until 1910 when the first 19.25 acres were acquired from Annie McLaughlin, Station scientists used rented lands on the east side of Whitney Avenue in what is now the Spring Glen section of Hamden and several orchards in Wallingford for experiments. Travel then was time-consuming and difficult because the Station owned no vehicles. The McLaughlin property was purchased because it was only a 20 minute trolley ride from the main laboratories in New Haven. The property included a house, barn and orchard. Lockwood Farm grew to about 74 acres with the purchase of adjacent farmland in 1985.

In the foyer of the Donald F. Jones Auditorium at the Station in New Haven, a plaque given by the Connecticut Seed Trade Association, commemorates the best-known contribution to agriculture made at Lockwood Farm. The plaque says: "Hybrid Corn, the revolutionary double-cross method was developed in 1917 by Donald F. Jones and first applied on the nearby farm of The Connecticut Agricultural Experiment Station."

Henry A. Wallace, who in 1926 organized the first company to develop, produce and sell hybrid corn seed, gave an address, "Small Plots and Big Men" on August 16, 1955. The former vice-president of the United States and highest ranking official to have visited Lockwood Farm, praised the Station and Jones, its great scientist: "No State Agricultural Experiment Station has ever accomplished so much with so little land, money, and salaries. The marvel is that Connecticut, which is about 38th in corn acreage, should have, during the first 20 years of this industry done perhaps a hundred times as much . . . as states where they grow 50 to 100 times as much corn as Connecticut, and where their experimental farms are far larger . . . ."

For years, Jones grew acres of corn bearing such names as C-102, Spancross, Marcross, Carmelcross, Lincoln, Lee, and Wilson. And varieties of peppers, squash, and strawberries were developed at Lockwood Farm. In the late 1940s, Jones, nearing the end of a brilliant scientific career, found through experiments with Paul A. Mangelsdorf a way to produce hybrid corn seed without labor-intensive detasseling.

At Lockwood Farm, James G. Horsfall field-tested organic fungicides that he developed to replace heavy metals previously used to control plant diseases. The principles of plastic plant shelters, mulches, and hot caps were worked out in field experiments during the 1950s.

Research on killer strains of the corn smut fungus helped pave the way for the current research on hypovirulent curing strains of the chestnut blight.

Recent research at Lockwood Farm has included studies of the uptake of ethylene dibromide (EDB) by plants; uses of mycelium wastes and sewage sludge in agriculture; spread of spores that cause plant diseases; experiments with new crops for Connecticut such as artichokes, Belgian endive, and radicchio; and biochemists have brought to the field genetically-engineered plants as they search for ways to make crops grow more efficiently by blocking wasteful photorespiration.

In 1931, the farm manager began making systematic daily weather observations which help in analysis of experiments and provide information used to study climate. The highest temperature recorded was 104 F on July 4, 1949 and the lowest was —24 F on February 16, 1943. The most precipitation in a 24-hour period was recorded on June 5, 1982 when 7.63 inches fell. Table 1 shows extremes of temperature and precipitation recorded at Lockwood Farm.

To conclude this history of Lockwood Farm I quote Brewer's report of 1900: "This Station was the first of its kind to be established by any State, as Mr. Lockwood well knew, and now he comes forward as the first person in America to bequeath any considerable sum as a permanent endowment for scientific agricultural research. He has the honor to be the leader in this special beneficence, of such far reaching importance to his native state and of wider benefit to mankind."

**Table 1. High and low temperatures and precipitation highs and low by month at Lockwood Farm 1931-1986. Compiled by Joan Arnold.**

| | Temperature F | | Precipitation | | |
|---|---|---|---|---|---|
| Month | highest for month temp (year) | lowest for month temp (year) | highest for day inches (day-year) | highest for month inches (year) | lowest for month inches (year) |
| January | 69 (1932) | —17 (1961) | 2.66 (3-1936) | 13.94 (1979) | 0.35 (1970) |
| February | 69 (1985) | —24 (1943) | 2.58 (20-1981) | 7.36 (1981) | 0.81 (1980) |
| March | 84 (1945) | —11 (1948) | 3.50 (6-1979) | 13.63 (1953) | 0.66 (1981) |
| April | 92 (1938) | 11 (1954) | 3.95 (10-1980) | 15.44 (1983) | 0.91 (1942) |
| May | 93 (1933/64) | 26 (1943/44/48) | 2.50 (2-1976) | 11.66 (1984) | 0.80 (1964) |
| June | 100 (1934) | 32 (1945) | 7.63 (5-1982) | 14.63 (1982) | 0.30 (1949) |
| July | 104 (1949) | 33 (1942) | 4.48 (29-1980) | 8.28 (1986) | 0.68 (1968) |
| August | 99 (1944/49) | 36 (1940) | 5.10 (27-1976) | 11.27 (1976) | 0.44 (1984) |
| September | 95 (1983) | 26 (1947) | 6.70 (12-1960) | 14.81 (1938) | 1.01 (1950) |
| October | 90 (1938) | 16 (1936) | 3.81 (24-1959) | 12.51 (1955) | 0.22 (1963) |
| November | 79 (1950) | 1 (1938) | 3.81 (29-1937) | 9.68 (1986) | 0.33 (1976) |
| December | 75 (1982) | —18 (1942) | 2.83 (15-1954) | 7.93 (1936) | 0.68 (1955) |

**THE FIRST REPORT** of the Station, printed in 1877, began with an announcement:

*It is the wish of the Board of Control to make the Station as widely useful as its resources will admit. Every Connecticut citizen who is concerned with agriculture...has the right to apply to the Station for any assistance that comes within its province to render, and the Station will respond to all applications as far as lies within its power.*

In 1877 the Station was only two years old, and in the ensuing 110 years its scientists have devoted themselves largely to experimentation, giving mankind vitamins, hybrid corn, soil tests, control of fungi by organic fungicides, and controls of caterpillars by wasps. Today the scientists search for traces of chemicals in soil and water, biological controls of insects and plant diseases, new crops and changes in the suburban forest, and ticks that cause disease to mankind. The experiments engross the mind.

The promise in the announcement of 1877 is, however, still redeemed daily: Citizens have a right to apply for assistance and the Station responds to all applications as far as it lies within its power.

The article by Mr. Welch and Ms. Lemmon describes some of our responses. **Paul E. Waggoner**

# Insect problems spawn many questions for Station entomologists to answer

**By Kenneth A. Welch and Carol R. Lemmon**

*What looks like soot and crawls?*
*Why are maggots on my ceiling?*
*What is making holes in my lawn?*
*Why are large black flies clustered inside my living room window?*
*Why is my cabbage wilting?*
*What is eating my bean leaves?*

These are a few of the five to six thousand questions Connecticut citizens pose about insect-related matters to the Entomology Department each year.

Questions come by telephone, in person or by letter. Contrary to common belief, we do not have all the answers yet, nor have we heard all the possible questions.

The telephone rings up to 50 times a day during the busy season.

Visitors enter bearing boxes, branches, bags, and bottles containing all kinds of critters.

Our mail, consisting of letters and packages, can be a challenge. Questions may be written on anything from a corporate letterhead to a piece of torn paper bag. The specimens we find inside can be alive or dead and range from whole to pepper-sized postage-machine shattered pieces. They are often disguised between pieces of sticky tape, in vacuum samples or embedded in strands of cotton.

We have seen dead birds, snakes and turtles, slugs, a scorpion, head lice, three square feet of turf, tree limbs, small shrubs, imaginative pieces of lint, and a live black widow spider.

We often identify familiar specimens with a quick glance. Other times identification of rare insects may require several hours to several weeks, even with the aid of our insect reference collection, identification keys, scientific journals, entomology texts, and a dissecting microscope.

Many questions are seasonal and can be predicted. For example, the eastern subterranean termite and the black carpenter ant swarm in late winter or early spring. Therefore, a call in February, March or April concerning swarming insects is probably about one or the other. The clover mite, also active in the early spring, looks like crawling soot.

Insects on the ceiling, which are often mistaken for maggots, are predictably Indian meal moth larvae. They crawl upward and across ceilings seeking shelter to form cocoons after they have completed feeding.

Other answers may be predictable, but the causes may vary. Moles and voles, grub digging skunks and nut burying squirrels, insect feeding birds, and emerging Japanese beetle adults all leave holes in lawns.

The presence of some insects implies a secondary problem. Past experience has taught us that large flies inside a living room window are a species of blue bottle fly. Since their larvae feed on carrion, our immediate assumption is that a dead animal is nearby. A fireplace often harbors a bird or small mammal which has fallen down the chimney and died.

Other questions may not be due to natural causes. For example: "crickets" with short chirps at regular intervals commonly turn out to be smoke detectors signalling weak batteries.

The answers that seem to create the greatest distress: *It's a tick* or *It's a termite*. Ticks cause justifiable concern because they transmit Lyme disease, which recently became a reportable disease in the state. The presence of termites causes concern because of anticipation of the cost of control and repair. Fortunately we can assure people that although the problem may need attention, there is no need for panic. To a lesser degree, avid gardeners are upset to learn their cabbage has wilted due to root maggot feeding or their beans have been skeletonized by the Mexican bean beetle.

The questions, in addition to allowing us to inform citizens about things that concern them, help our research because they may bring new pests to our attention.

For example, a resident of West Haven was curious about a series of small, white cotton-ball-like puffs lining the underside of branches of a hemlock tree. The branch she held brought to our attention that the hemlock woolly adelgid, a serious pest of hemlock, had entered Connecticut. Its ravages were reported in *Frontiers of Plant Science*, Spring 1987.

We always wonder what question the next visitor, caller, or letter writer will ask us.

# A new microbe is infecting Japanese beetles in Connecticut

**By James L. Hanula and Theodore G. Andreadis**

Adult Japanese beetles, *Popillia japonica*, are brightly colored, easily recognized pests that eat the leaves of trees, grapes and roses. Their larvae, also known as grubs, are less conspicuous; they live in soil, feeding on the roots of grasses and small trees. Because the Japanese beetle has few natural enemies in Connecticut, and such enemies as milky disease are not effective, pesticides are used to control the grubs. Public concern about insecticides applied to the soil to control grubs has prompted us to investigate biological controls of this insect.

Several unhealthy grubs were found in 1986 to contain a previously unknown microscopic parasite in their Malpighian tubules, which like kidneys, remove nitrogenous wastes. We named this microsporidian parasite *Ovavesicula popilliae*, which represents a new genus and species. The genus name *Ovavesicula* means "egg-shaped vesicle" and refers to the shape of the structure enclosing the spores (Fig. 1).

Like other microsporidia, *O. popilliae* is an obligate single-celled parasite that can only reproduce in a living insect. However, it is unique in that it produces infectious spores in packets of 32. After being ingested by a grub, the spores extrude long, thread-like tubes and inject their contents into host cells. The parasite multiplies by asexual reproduction and then transforms into a thick-walled vesicle that contains the 32 infectious spores (Fig. 1).

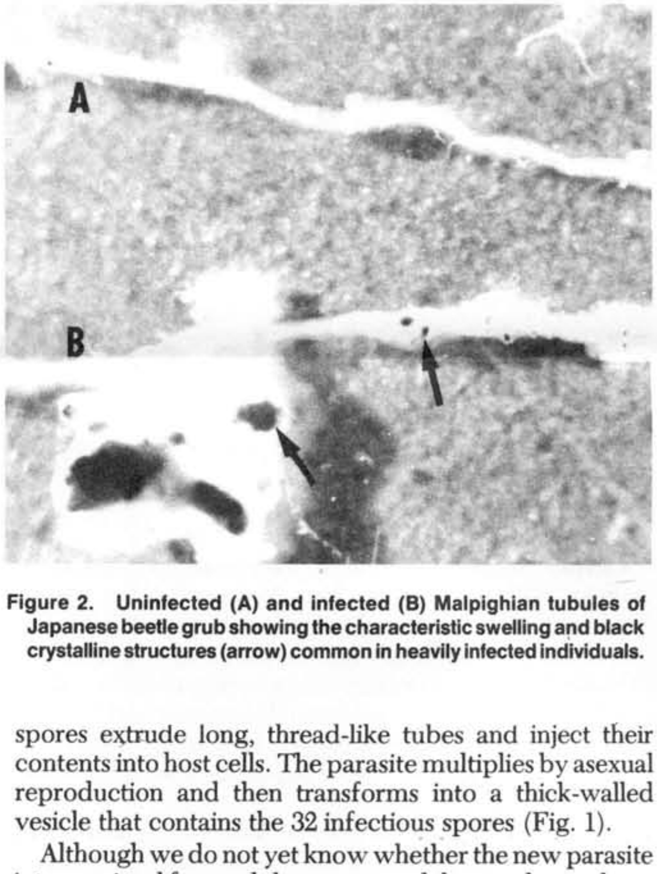


**Figure 2. Uninfected (A) and infected (B) Malpighian tubules of Japanese beetle grub showing the characteristic swelling and black crystalline structures (arrow) common in heavily infected individuals.**

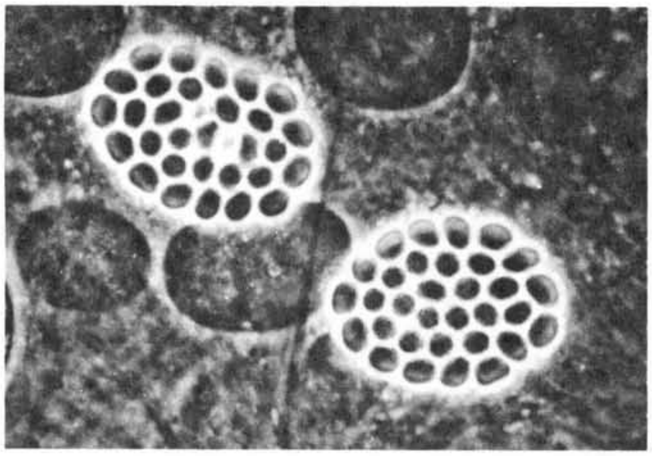

**Figure 1. Sporophorous vesicles of *O. popilliae* containing 32 spores each.**

Although we do not yet know whether the new parasite is transmitted from adults to eggs and then grubs, we have learned something of the spore of the parasite, which is the only stage that survives outside the beetle. Spores pass through the hindgut of infected grubs and are excreted with the feces. Other grubs ingest these spores and become infected. When we fed spores to grubs in the autumn the grubs were infected.

The Malpighian tubules are relatively uniform in diameter in healthy grubs, but in diseased grubs these tubules become swollen and distended, and often contain many spores which make them appear white (Fig. 2).

Infected tubules also frequently contain black crystals, probably due to a reaction to the pathogen. Although infections begin in the Malpighian tubules, they may spread to the fat storage cells of heavily infected grubs. Grubs that survive infection emerge as infected adults, but it is unknown whether infection can be passed to the next generation through the eggs. However, we have found that heavily infected females lay fewer eggs than healthy ones.

Apparently only Japanese beetles are susceptible to *O. popilliae*. We found no evidence of infection in grubs of Asiatic garden beetle (*Maladera castanea*), oriental beetle, (*Anomala orientalis*), or several native species of grubs found in turf containing numerous infected Japanese beetles. In addition, *O. popilliae* did not develop in five third-stage oriental beetle grubs fed 1000 spores.

Geographic distribution of the parasite and prevalence of infection were determined in the fall of 1986 by collecting and examining Japanese beetle grubs from 49 different sites in Connecticut. Infections were identified at 34 of the sites. The wide distribution of the parasite is shown in Fig. 3.

The prevalence of infected grubs ranged from less than 1 to 95% in a golf course in Norwalk. The highest Japanese beetle population was in Groton were 24% of the grubs were infected. We found no correlation between numbers of grubs and the percent infected.

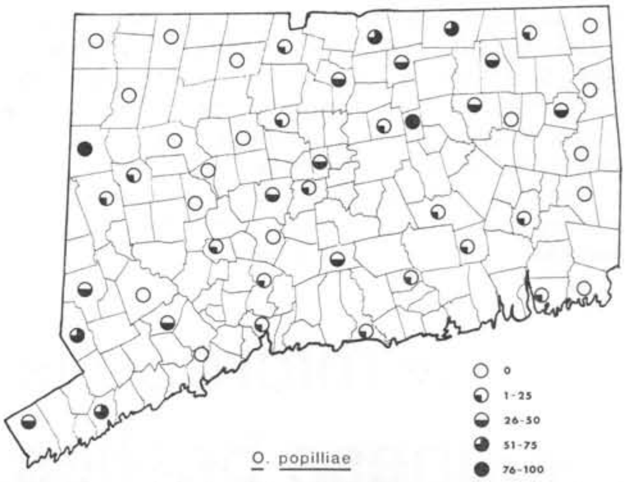


**Figure 3. Percent infection of *O. popilliae* in Japanese beetle grubs at 49 sites in Connecticut.**

Although *O. popilliae* has only recently been discovered, it is probably not a new pathogen. Its distribution throughout the state suggests it has been here for some time. Also, since it apparently attacks only Japanese beetles, it may have arrived here with the beetles about 1910.

We are now determining if we can use *O. popilliae* to help control Japanese beetles, and thereby reduce the amount of pesticide applied to the soil.

# Testing table and wine grape varieties for hardiness and disease susceptibility

**By Gerald S. Walton**

Grapes, both table and wine, have been grown in Connecticut for many years. The acreage of wine grapes increased dramatically with the enactment of the Farm Winery Act in 1978, and the interest in table grapes has increased, both for personal consumption as well as sale at roadside markets. In response to this interest and to assist vineyardists encouraged by the law, I began experiments in 1978 to investigate the winter hardiness and disease susceptibility of grape varieties.

I started with eight varieties in 1978 and added seven more in 1979. In 1982 and each subsequent year, some varieties have been removed and replaced by new varieties. Including the 1986 plantings, 12 table and 24 wine grape varieties have been planted.

Vines were planted in the spring and all flowers were removed for 2 years. Plants were trained using the four-arm Kniffen method with two wires about 3 and 6 feet from the ground. In the third year, a few flowers were left on each vine. During the first 3 years, pesticides were applied sparingly to allow assessment of disease susceptibility. Later, pesticides were applied only when a problem occurred. This procedure was followed so that I could measure yield in addition to observing the occurrence of disease problems.

During each season the vines were evaluated several times for disease, winter injury and ozone injury. If less than 5% of the plant was affected, a particular disorder was rated slight. A moderate rating indicated that between 5 and 40% was affected. A severe rating was given if greater than 40% was affected.

During the 8 years that I have grown grapes at Lock-

**Table 1. Disease susceptibility and winter hardiness of table grape varieties at Lockwood Farm (1979-86).**

| Disease or Injury | Susceptibility | Variety |
|---|---|---|
| Black rot | Slight | Buffalo, Concord, Concord seedless, Einset, Remaily |
| | Moderate | Himrod, Interlaken |
| | Severe | Suffolk red |
| Powdery mildew | Slight | Einset |
| Downy mildew | | No varieties affected |
| Crown gall | | No varieties affected |
| Winter injury | Slight | Himrod, Interlaken, Suffolk red |
| Ozone injury | | No varieties affected |

## Grape disorders

**Black rot,** caused by the fungus *Guignardia bidwellii,* infects the leaves, stems, flowers and fruit during warm, moist weather. The infection begins as a small brown spot. As the disease progresses, the infected tissue becomes dark brown to black on the stems, flowers and fruit, but remains brown on the leaves. On the stems, the affected area is sometimes slightly sunken, while on the fruit the tissue dries and the grapes look like raisins. Pinhead-size black, spore-bearing structures can be seen on infected tissue. Because the fungus overwinters on infected tissues, it is best removed before the next growing season. The fungus can be controlled by captan, folpet, mancozeb or ferbam; ferbam being the most effective.

**Powdery mildew,** caused by the fungus *Uncinula necator,* is a white, powdery growth on the leaves, stems and fruit. Unlike most fungal pathogens, this fungus, which does not depend on wet leaves for infection, can infect susceptible tissue during periods of high humidity. The fungus can be controlled with benomyl, karathane or sulfur, although sulfur will often injure plants during hot weather.

**Downy mildew,** caused by the fungus *Plasmopara viticola,* may affect leaves, young stems and immature fruit. On leaves, the initial symptom is a pale yellow spot on the upper surface. Then a white, powdery growth that will later turn gray develops on the lower surface. A similar growth appears on the fruit and young stems. Microscopic examination is often required to distinguish between downy and powdery mildew on these plant parts. On the leaves, however, the two diseases can often be differentiated because powdery mildew occurs mostly on the upper surface, whereas downy mildew is usually on the lower surface. The fungus can be controlled with captan, folpet or mancozeb.

**Crown gall,** caused by the bacterium *Agrobacterium tumefaciens,* is a swelling of the stems, crowns or roots. Young galls are smooth and then roughen as they enlarge. Their size can vary from a slight enlargement to one or more inches in diameter. The galls appear light brown to brown, and in some cases dark brown, in color. Because the bacterium that causes the disease can survive several years on dead plants, removal of infected plant tissue helps curtail spread of the disease. No chemicals control the crown gall bacterium. There have been some reports of a biological control using a bacterium, *Agrobacterium radiobacter,* which is sold under the name of Gallex. However, this material is not widely available and its effectiveness has been variable.

**Ozone** causes a yellow stippling on the leaves and is more prevalent on older leaves. No chemical sprays will protect from ozone.

wood Farm, I encountered three fungal diseases: black rot, powdery mildew, and downy mildew. I also encountered the bacterial disease, crown gall; ozone injury; and winter injury.

The table grape varieties for which I have data are: Buffalo, Concord, Concord seedless, Einset, Himrod, Interlaken, Remaily, and Suffolk red. All table varieties showed at least a slight susceptibility to black rot (Table 1). Suffolk red, a seedless variety of good culinary quality, was the most susceptible; in most years, severe symptoms occurred on the leaves, stems, and fruit. The fruit of Interlaken and Himrod, two white seedless varieties, were moderately susceptible, while the leaves and stems were only slightly susceptible. Einset was slightly susceptible to powdery mildew. None of the table varieties was affected by crown gall or downy mildew.

Suffolk red exhibited moderate injury after the winter of 1980-81 when temperatures dropped to —15 to —20 F, but it was injured only slightly in other years. Himrod and Interlaken were injured slightly during two of the four years they have been in the trials. None of the table varieties exhibited typical symptoms of ozone injury.

Among the French hybrid wine varieties, black rot was severe on Aurore (Table 2), while the other varieties were only slightly susceptible. Chancelor was very susceptible to downy mildew, with all the fruit affected in 1985, the first year of fruit production. Neither powdery mildew nor crown gall affected the French hybrid varieties. Foch showed slight winter injury each year, whereas the other French hybrid varieties appear to be hardy. Although moderate ozone injury occurred on Seyval, fruit production was not affected.

Only five *vinifera* varieties were tested since their winter hardiness is questionable in this area. Pinot noir and Gamay beaujolais, two varieties that were included in the initial plantings, were injured severely during the winter of 1980-81 (Table 2). Neither variety recovered satisfactorily, so the plants were removed in 1984. Riesling was injured moderately but it recovered.

Riesling appears very susceptible to crown gall and powdery mildew. Pinot noir and Gamay beaujolais appear moderately susceptible to powdery mildew. All five *vinifera* varieties were slightly susceptible to black rot. Downy mildew did not affect the *vinifera* varieties.

The other wine grapes, Catawba, Niagara, Horizon, and Cayuga white, were slightly susceptible to black rot (Table 2). Niagara was slightly susceptible to powdery mildew, moderately susceptible to downy mildew, and was injured slightly during the winter of 1980-81. Crown gall did not occur on these four varieties.

In summary, except for the many seeds in each grape, Buffalo could be considered the best table variety tested.

THE CONNECTICUT
AGRICULTURAL EXPERIMENT STATION
P.O. BOX 1106
NEW HAVEN, CONNECTICUT 06504
John F. Anderson
Director
PUBLICATION
PENALTY FOR PRIVATE USE, $300

AN EQUAL OPPORTUNITY EMPLOYER

BULK RATE
POSTAGE & FEES PAID
USDA
PERMIT No. G269

It had few disease and insect problems and was winter hardy. The fruit is sweet and flavorful. Einset, a new seedless table variety from the New York Agricultural Experiment Station at Geneva, produced a fruit with good culinary quality, but not as sweet as Buffalo; it was slightly susceptible to black rot and powdery mildew.

**Table 2. Disease susceptibility and winter hardiness of wine grape varieties at Lockwood Farm (1979-86).**

| Disease or injury | Susceptibility | Variety |
|---|---|---|
| FRENCH HYBRID | | |
| Black rot | Slight | Baco noir, Chambourcin, Chancelor, DeChaunac, Foch, Ravat 51, Seyval, Seibel 10868, Verdelet, Villard blanc, Villard noir |
| | Severe | Aurore |
| Powdery mildew | | No varieties affected |
| Downy mildew | Severe | Chancelor |
| Crown gall | | No varieties affected |
| Winter injury | Slight | Foch |
| Ozone injury | Moderate | Seyval |
| VINIFERA HYBRID | | |
| Black rot | Slight | Chardonay, Gamay beaujolais, Gewurztraminer, Pinot noir, Riesling |
| Powdery mildew | Slight | Chardonay, Gewurztraminer |
| | Moderate | Gamay beaujolais, Pinot noir |
| | Severe | Riesling |
| Downy mildew | | No varieties affected |
| Crown gall | Severe | Riesling |
| Winter injury | Moderate | Riesling |
| | Severe | Gamay beaujolais, Pinot noir |
| Ozone injury | | No varieties affected |
| OTHER VARIETIES | | |
| Black rot | Slight | Catawba, Cayuga white, Horizon, Niagara |
| Powdery mildew | Slight | Niagara |
| Downy mildew | Moderate | Niagara |
| Crown gall | | No varieties affected |
| Winter injury | Slight | Niagara |
| Ozone injury | | No varieties affected |

Among the French hybrid wine grapes, Seyval, Baco noir, Foch, Ravat 51, and DeChaunac were the better varieties in regards to disease problems and winter hardiness. Of these, Seyval had the additional desirable characteristic of not producing excessive leaves and vines, which allowed easier harvest.

Although no *vinifera* variety was trouble-free, Chardonay and Gewurztraminer appeared to have less problems than the other *vinifera* varieties tested.

I limited my evaluation of wine grape varieties to disease susceptibility and winter hardiness, leaving evaluation of the wine made from these varieties to wine makers and diners.

## New director, other changes

During 1987 the Board of Control of the Station appointed three scientists to new roles.

John F. Anderson, an entomologist known for his research on ticks and Lyme disease, became the seventh Director of The Connecticut Agricultural Experiment Station. He succeeds Paul E. Waggoner, who retired after serving as Director since January 1972.

Louis A. Magnarelli, who has investigated ticks and Lyme disease and other medically-important arthropods, succeeded Anderson as chief entomologist and State Entomologist.

Mark S. McClure, who has investigated scale insects of hemlocks and pines, became Assistant to the Director in Charge of the Valley Laboratory in April. He succeeded Gordon S. Taylor, who retired.

The Connecticut Agricultural Experiment Station, founded in 1875, is the first experiment station in America. It is chartered by the General Assembly to make scientific inquiries and experiments regarding plants and their pests, insects, soil and water, and to perform analyses for State agencies. Subscriptions are available free upon request to Publications; Box 1106; New Haven, Connecticut 06504 ISSN 0016-2167