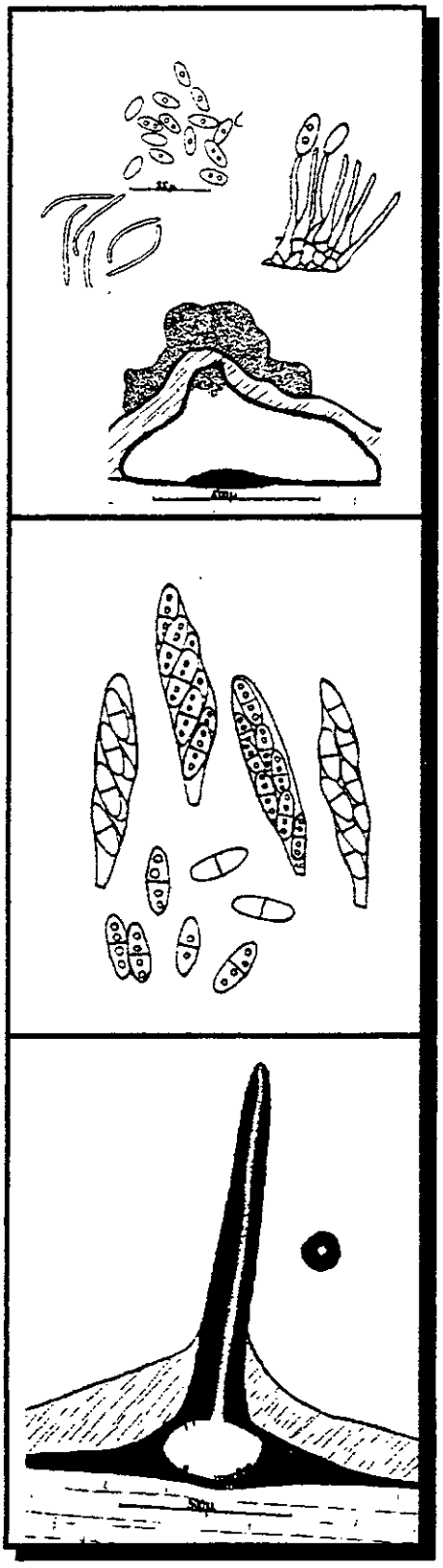
December, 1996
Volume XVII Number 4



PLANT DIAGNOSTICS QUARTERLY

Features

On the cover: *Diaporthe crotalariae* G.F. Weber, Crotalaria stem canker.
Digitally remastered from original 1932 drawing by George F. Weber.

Top: *Phomopsis crotalariae* G.F. Weber (anamorph)

Middle: Asci & Ascospores

Bottom: Perithecium

Plant Diagnostics Quarterly (PDQ) is a nonprofit publication which serves plant pathologists in extension, regulatory and industrial clinical laboratories, private consultants, and other interested persons. PDQ is published four times a year. Yearly subscription fees are:

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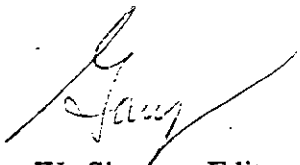
FROM THE EDITOR

Dear Readers:

The December issue of 1996 is finally to bed! With this issue, comes the end of the 1996 subscription year and my last task as editor of PDQ. It has been a three-year labor of love for me and my staff to deliver PDQ to the readership. I have enjoyed the continued interaction with the loyal contributors to each issue. My thanks go to Melodie Putnam (Diffusion), Richard Buckley, Ann B. Gould and Anne B. Sindermann (Northeast Region), Jackie Mullen (Southeast Region), Karen Rane (Central Region), Thomas Isakeit and Steven Koike (Southwest Region), and Ellen Bentley (Northwest Region) for their reliable contributions to PDQ over the period of my editorship. My thanks also go to the Managing Editor, Gail Ruhl at Purdue. Her role has provided stability to PDQ since its inception in 1980. She has been extremely patient with my "on again, off again" issue submission schedule! All of these people volunteer a tremendous amount of their professional time performing their tasks for each issue of PDQ. I hope they all remain in their posts to aid in the transition to a new editor, Ms. Betsy Hudgins at Oklahoma State University.

My special thanks are saved for my staff who have born the brunt of additional work due to my moment of weakness in 1993 when I volunteered to take over PDQ from Melodie Putnam. Ruth Kusky, my secretary, has technically compiled each issue and delivered a camera-ready copy to Purdue for duplication. Ruth has dealt with all the glitches with electronic files, incompatible software, locked disks, mismatched fonts and point sizes as well as the occasional "delinquent contributor". Ruth has the cheery, phone personality that can deliver a "Your late!" message in an inoffensive, engaging manner. I know Ruth will not miss the work of PDQ but she will miss communicating with all the contributors! Cover layout and the Florida contribution to the Southeast Region report has been consistently provided by my Senior Biologist and Clinic Coordinator, Richard Cullen. In addition, Richard and Mark Gooch (Clinic Biologist) have provided backup editing for PDQ issues. They have all contributed countless hours to deliver PDQ to the readership. I only hope the new editor has the loyal productive staff I have had to compliment her enthusiasm in the editorship of PDQ in the years to come.

My final act as Editor is to urge you to RENEW your subscription to PDQ and encourage at least one new subscription to boost the circulation. It's been fun! Have a productive new year.



Gary W. Simone, Editor
(Emeritus)

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PLANT DIAGNOSTICS QUARTERLY

Enclosure

Pecknold, Paul C. 1996. Peach Leaf Curl. BP-54.
Botany and Plant Pathology Dept., Purdue University
West Lafayette IN 47907. 2pp.

Albers, M., J. Albers, J. Cummings-Carlson, L. Haugen, and N. Wenner. 1996. Rhizosphaera Needle Disease of Fir. NA-PR-06-96. USDA Forest Service, Northeastern Area.

PDQ -- Plant Diagnostics Quarterly

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Guidelines to Contributors

Submission of articles

Articles may be submitted in and of the following manners:

1) As a "document" or "note" attached to an electronic mail message. Send these articles to Betsy Hudgins at **hudgins@okway.okstate.edu**. I use Microsoft Word 7.0a but can accept documents from earlier versions of Microsoft Word or WordPerfect versions 5.1 or higher.

2) As a diskette (3.5") with PC formatting if possible.
Mail to: Betsy Hudgins
110 NRC
Department of Plant Pathology
Stillwater OK 74078-3032

Please include a hardcopy of the article with the disk. Disks will be returned.

3) As a camera-ready hardcopy. Follow manuscript guidelines below. Mail to Betsy Hudgins at the above address.

Information for the classified section (including job announcements and workshops) can be submitted in any of the above manners or as a email message.

Manuscript Format:

Titles: Center in Boldface; Author(s) and institution(s) should be centered below the title.
Margins: 1 inch (Top, Bottom, Left, Right)
Page Numbers: Do not include (although you may lightly pencil page numbers on any hardcopies that are sent)
Font: Something easy to read, such as Times New Roman, 12 point
Spacing: Single-spaced
Latin binomials: Italicized
References: Cite at the end of the article using a consistent format, such as that used in Plant Disease
Printing: If sending a hardcopy, laser printed articles are preferred; type needs to be clear and dark enough to be reproduced well.

Enclosures:

Send 200 copies of fact sheets to be used as enclosures in the PDQ to:

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If you are unable to supply 200 copies, send a few to Gail Ruhl (at the above address) and request that they be duplicated. Fact sheets with pictures that are to be copied must be of adequate quality to enable good reproduction of the photographs.

PDQ Deadline Dates for 1997

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*Date by which all information **must** be received.

Plant Diagnostics Quarterly (PDQ)

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DIFFUSION
Compiled by Melodie Putnam

Taxonomic studies on streptomycetes causing potato common scab: a review. The production of scab symptoms on potato tubers is not due to the activity of a single, genetically unified species. C. Goyer (Univ. Serbrooke, Quebec) and colleagues have evaluated published reports on deep-pitted and common scab. Although it is known that several different *Streptomyces* species can cause scab, the authors also found that within *S. scabies,* there is more diversity than one would expect in a conventional species. At least three different groups of relatedness exist based on DNA-DNA hybridization studies, protein profile analysis, and complementation tests. In addition, the authors find "we are faced with an almost bewildering array of phenotypically, physiologically, and genetically diverse strains of *Streptomyces* which can induce common scab on potato and root crops." The fact that so many different organisms can cause the same or similar symptoms presents interesting questions regarding the evolution and mechanisms of pathogenicity. **Can. J. Plant Pathol. 1996, 18:107-113.**

The taxonomic position of the causal agent of Acremonium collapse of muskmelon. An *Acremonium* sp. has been involved in serious losses of muskmelon in Spain for several years. More recently, the fungus has been isolated from cucurbits in California and Texas production areas. The authors (A. Alfaro-Garcia, Univ. Politecnica, Valencia, Spain; et al.) propose the common name for the disease as "Acremonium collapse" due to the rapid death of affected plants. In Spain the first symptoms of attack by *Acremonium* on muskmelon seedlings include corky yellow-brown lesions at the junction of hypocotyl and root, and production of adventitious rootlets along the hypocotyl above the lesion. Affected roots are generally not water-soaked or macerated, but root hairs and small tertiary roots are generally decayed and brown or lacking altogether. Late symptoms are typified by a rough corky appearance and necrotic areas in primary and secondary roots. The species is described as *Acremonium cucurbitacearum* Alfaro-Garcis, W. Gams & J. Garcia-Jimenez, sp. nov. **Mycologia 1996, 88:804-808.**

The origin of *Phytophthora infestans* populations present in Europe in the 1840s: a critical review of historical and scientific evidence. D. Andrivon (INRA, Le Rheu, France) has reviewed literature dating back to 1845 in an attempt to discover and explain why, until recently, there has been only one genotype of *P. infestans* outside Mexico in areas as widely separated as South America, North America, and Europe. The presence of diverse genotypes in Mexico support the theory that the fungus is native to the central highlands there. Establishment of a single genotype elsewhere is thought to have occurred via a three step process, first postulated by P.W. Tooley, C. D. Therrien, and D.L. Ritch in 1989. In this theory the South American Andes (the origin of the potato) is considered a secondary home to *P. infestans*. From there the fungus, after several centuries, moved to the United States in 1841-1842 and to Europe in 1843-1844. The theory that the fungus moved directly from Mexico to the US and Europe is not supported by the published data. **Plant Pathology 1996, 45:1027-1035.**

NORTHEAST REGION REPORT
Richard J. Buckley

As you may have already noticed, the Northeast Region Report is unusually short this issue. This is largely due to the small response I received from the normal contributors in our region for this issue, my failure to personally harass each of you for more information, and the fact that we will have a new managing editor for the coming year. Our new editor has given me a February 17, 1997 deadline for the March issue. This significantly reduces the time we have between issues; therefore, I thought I would save the contributions (all three) received for this issue and use them in the next one. My intention is to get contributions from those of you on holiday during the last request period, so be forewarned that a letter, phonecall, or e-mail message is coming! The success of this column depends on everyone's input. Those of you that are not on my normal "hit list" of contributors are welcome to join in. If you have information that may be of interest to plant pathologists in our region, please pass it along to the Rutgers Plant Diagnostic Laboratory, by fax at 908-932-1270, or by e-mail at Clinic@AESOP.Rutgers.Edu.

One final note, because of the increasing sample load at the Rutgers laboratory (25% growth per year), I am finding it more and more difficult to cope with extra responsibilities. This is my public appeal to find my replacement as the Northeast region editor for Plant Diagnostics Quarterly. If you are interested in assuming this role, please contact me as soon as possible. It has been a fulfilling and interesting task that I am sure someone would enjoy. Besides, I promise to contribute when you call!

SOUTHEAST REPORT
Compiled by Jackie Mullen

Most of the disease reports of the fall quarter included a larger than normal number of ornamentals problems due to the abnormally warm fall season in the Southeast.

ARKANSAS. With greenhouse ornamentals, anthracnose and damping off were diagnosed on pansy *(Viola)*. In turfgrasses, zoysia rust, dollar spot, gray leaf spot, and Helminthosporium leaf spot were frequently diagnosed from home lawns. Leptosphaerulina leaf blight was also observed on hybrid Bermuda grass from a golfcourse in the southeastern section of the state. Tree problems included powdery mildew and anthracnose which was observed this fall and may have accelerated early defoliation.

On soybeans, charcoal rot *(Macrophomina)* was common on non-irrigated fields. Soybean cyst nematode *(Heterodera)* was quite common on soybean as well as frogeye leaf spot. Bacterial blight was also prevalent in the lower canopy on many soybean varieties this fall.

On turnip, there was a high incidence of Cercospora leaf spot during October and November. Bacterial spot was common on pepper foliage and fruit. Other vegetable diseases included bacterial wilt on tomato and damping off on various greenhouse transplants.

KENTUCKY. Julie Beale reported that home landscape and commercial operations for ornamentals productions were especially bothered by spider mites this past fall. Spider mite damage on spruce was by far the most common landscape problem for the fall, but a fair number of cases of bacterial scorch and Tubakia leaf spot on pin oak were seen into October. Turfgrass problems included summer patch *(Magnoporthe),* anthracnose *(Colletotrichum)* and pink snow mold *(Microdochium)*. An unusually severe case of Pythium root rot was seen on creeping bentgrass in October and again in November. Sphaeropsis tip blight, especially on Scots pine, was a problem for Christmas tree growers. One case of rust *(Puccinia)* on chrysanthemum was seen.

Ear and stalk rots of corn were fairly common in Kentucky this fall. Diplodia ear rot was seen most frequently, although several cases of Fusarium ear rot and Giberrella stalk rot were diagnosed. Stem canker *(Diaporthe)* on soybean was also diagnosed quite a few times.

TENNESSEE. Beth Long's report includes landscape/nursery problems of Botryosphaeria canker on Japanese maple, rhododendron, dogwood, juniper and redbud; pine problems of white pine decline, environmental stress related problems, and Sphaeropsis blight; hemlock with needle blight *(Fabrella tsugae)*; blue spruce with Cytospora canker and Rhizosphaera needle cast.Rose rosette disease is still being found periodically on multiflora rose in middle TN. This disease has not yet spread into East TN. Most of the wild multiflora rose in West TN has been killed, which is a great benefit to farmers who had been spending lots of dollars trying to control this nasty pasture weed. Powdery mildew has been a common on dogwood. Homeowner diseases included secondary fungal cankers (*Botryosphaeria,* etc.) that were mostly stress related. Dogwood powdery mildew was another common homeowner problem. With greenhouse and commercial turf operations, Botrytis blight and bacterial stem rot was commonly found on poinsettia. Anthracnose was found on pansy, and Pythium root rot was found in greenhouse tomato samples. Turf diseases were: Pythium blight and Rhizoctonia brown patch on fescue; Leptosphaerulina leaf blight and Pythium blight on bentgrass golf greens; zoysia patch on zoysia; head smut on crabgrass and fescue.

With field crops, tobacco problems included target leaf spot, black shank, *Penicillium,* and frog-eye leaf spot. Blue mold was widespread in middle and East TN with most fields having low-moderate disease levels. Southern blight was a problem in some soybean fields.

With commercial fruits/vegetables, apples were identified with Phytophthora root rot, Phomopsis canker and burr knot. Turnip greens were commonly found with Cercospora leaf spot. Other problems on turnip included downy mildew and scab. Several spinach samples were identified as Pythium root rot problems.

NORTH CAROLINA. Tom Creswell reported a variety of diseases on grasses and ornamentals. With grasses, Helminthosporium-like fungi were common on fescue and Bermuda grass. Dollar spot was found on zoysia and ryegrass. In the area of woody ornamentals, nematodes and Phytophthora root rot dominated boxwood and azalea samples, along with black root rot on Japanese holly samples. Leyland cypress was diagnosed with cypress canker

(*Seiridium cardinale*) and in one case *Asperisporium sequoiae* needle blight (also the cause of "Cercospora" needle blight of eastern red cedar). Tubakia leaf spot was noted on maple and pin oak. Herbaceous ornamental diseases included the following: foliar nematodes on Braun's holly fern, lantana, butterfly bush, coralbells, perennial salvia, toad lily (*Tricyrtis hirta*), verbena, leatherleaf fern, southern maidenhair fern and edible sage; Myrothecium leaf spot on small rooted cuttings of New Guinea impatiens; Rhizopus soft rot on Dutch iris and Narcissus; black root rot, Cercospora leaf spot, Septoria leaf spot, Pythium root rot and Phytophthora root rot on pansy. Also, maize chlorotic dwarf and maize dwarf mosaic viruses were diagnosed by ELISA on an ornamental fountain grass (*Pennisetum* sp.).

With field crops/small grains, cold injury and nutritional problems were seen on most samples with a few examples of Helminthosporium leaf spot on oats.

With fruits and vegetables, strawberry and collard samples were common. The most common diseases of strawberry were angular leaf spot, anthracnose and common leaf spot. Also, there were a few examples of late season fruit rots of muscadine grape sent to the clinic. Black rot, bacterial soft rots, downy mildew and environmental/nutritional problems were common on collards. Several viruses were found on cucumber (Papaya ringspot, tobacco etch and zucchini yellow mosaic), and tomatillo (INSV, PVY, and tobacco etch) infections were also seen.

Tom reported the total sample number for the NCSU lab for 1996 dropped about 11% to 5882.

SOUTH CAROLINA. James Blake's report included the following unusual disease occurrences: St. Augustinegrass with root knot nematode; dwarf gardenia with Rhizoctonia root rot; daylily with root knot nematode; *Kerria* (Japanese rose) with Cylindrosporium leaf spot; edible fig with Botryosphaeria canker; blueberry with leaf rust - *Pucciniastrum vaccinii*.

ALABAMA. Jackie Mullen reported an abundance of turf grass diseases. Warm-season turf diseases included brown patch on St. Augustine and centipede; rust on Bermuda grass; Exserohilum leaf spot on Bermuda grass; take-all patch on St. Augustine grass. On cool-season grasses, Pythium problems were diagnosed on bentgrass; fescue was observed with a Helminthosporium-type of crown rot and a Ustilago head smut.

Ornamental diseases included Seiridium canker on Leyland cypress; Cercospora leaf spot on dogwood; *Cristulariella zonate* leaf spot on maple; Rhizoctonia root rot on poinsettia; *Phytophthora parasitica* stem blight and Alternaria leaf spot on periwinkle; and anthracnose *(Colletotrichum), Phytophthora parasitica* root rot, Pythium root rot, and Rhizoctonia root rot on pansy.

Vegetable problems included late blight on tomato; black rot *(Xanthomonas campestris* suspect) on collard and turnip; Cercospora leaf spot on turnip; black rot *(Ceratocystis fimbriata)* and Fusarium surface rot on sweet potato.

FLORIDA. In South Florida, Bob McMillan and Bill Graves reported that heavy rain in early fall brought problems for both ornamental and vegetable growers. Edema showed up on *Schefflera arboricola* and orchids as well as hibiscus. Dwarf Hawaiian snowbush (*Breynia* sp.) developed web blight, which is a new disease for this plant. Certain cultivars of *Guzmania* are showing susceptibility to Drechslera leaf spot. Phytophthora infected both the leaves and fruit of yellow squash and became a post-harvest problem as well. Phomopsis fruit rot was seen for the first time, in Homestead, on Thai eggplant. With increasing acreage of Bitter melon in South Dade County, diseases of this crop are beginning to be recognized. Phomopsis fruit rot of Bitter melon had not been seen before and Fusarium wilt developed, which is new to Bitter melon in Homestead. High winds for three weeks in October/November caused severe leaf burn and/or defoliation to most ornamental trees as well as horticultural crops in the entire affected area in South Florida.

The Citrus Canker Eradication Program in Dade County continues to be a major undertaking for Florida regulatory personnel. The quarantine area in urban Miami has been expanded to 270 square miles. A door-to-door survey is being conducted to find and remove all infected citrus in this area. Approximately 1500-4000 citrus trees per square mile are growing in this urban area. In the last 15 months 22,000 trees have been removed and another 17,000 were severely pruned (hat-racked). This is the Asian strain of citrus canker which currently has not been found in any commercial groves in Florida.

From the Gainesville lab, Richard Cullen reported that turf continues to be a major component of their sample load. The most common diagnosis on St. Augustinegrass and Bermudagrass was take-all root rot (*Gaeumannomyces graminis* var. *graminis*). In fact, it is now the exception when this organism is not found on these grasses. A major decline of Bahiagrass pastures in South Central Florida continue to stymie diagnosticians and researchers in Florida. Hundreds of acres of pasture are involved with 80-90% of some pastures dying.

Blueberry production in Florida is still increasing, but the honeymoon period for this "pest free" crop is over. Grower groups are realizing the importance of diseases in this cropping system. Some of the blueberry diseases encountered this reporting period include *Pucciniastrum myrtilli,* rust; *Botryosphaeria* spp., Bot-rot; *Phyllosticta* sp. leaf spot; and, for the first time in this lab, *Septoria albopunctata,* eye spot.

Agronomic crop diagnosis of interest included *Cristulariella* sp. causing large zonate lesions on pigeon pea. Another unusual diagnosis on pigeon pea was *Choanephora* sp. causing a wet rot on leaves and stems in one of the wet periods this quarter. *Cercosporidium* sp. was found causing leaf spots on perennial peanut for the first time in this lab. Watermelon mosaic virus II was diagnosed in hairy indigo.

A great number of interesting ornamental crop problems were diagnosed this quarter. Here are a few: *Ptychogaster cubensis,* canker and dieback of wax myrtle; *Nectria* sp., canker on red maple; *Sclerotinia sclerotiorum,* aerial blight on asparagus fern; *Phaeotrichoconis* sp., leaf spot on Ixora; *Acidovorax* sp., bacterial leaf spot on Impatiens; *Thielaviopsis paradoxa,* bud rot of

sabal palm; *T. basicola,* root and crown rot of pansy; *Cylindrocladiella* sp., root rot of rose (unreported); and *Idriella* sp. (unreported) and *Cylindrocladium* sp. root and crown rot of Venus-fly-trap.

On the vegetable crop front, bell pepper diseases were the most interesting. Race 3 of *Xanthomonas campestris* pv. *vesicatoria (X.c.v.)* has been diagnosed almost exclusively in this lab from peppers and tomatoes in the past three to four years. Bell pepper samples which were resistant to a couple races of *X.c.v.*. were found to be severely spotted with Race I of *X.c.v.* Tospoviruses remain a minor production problem in Florida on most susceptible crops, with TSWV usually found in field crops and INSV usually found in greenhouse production. However, two separate pepper samples from commercial fields were infected with Impatiens necrotic spot virus (probably greenhouse transplants). Other viruses of pepper diagnosed this quarter were tomato spotted wilt virus and pepper mild mottle virus. Ground-cherry (*Physalis* sp.) from a pepper field had cucumber mosaic virus, tomato spotted wilt virus, impatiens necrotic spot virus and pepper mild mottle virus.

MISSISSIPPI. M.P. Patel noted that Phytophthora crown rot (*Phytophthora nicotiane* var. *parasitica)* and black root rot *(Thielaviopsis basicola)* on pansy plant production was a major disease problem in Mississippi. One grower lost a considerable number of plants due to Phytophthora crown rot. His estimate was about $18,000 to $20,000 loss. Another grower lost several thousand plants due to black root rot disease. Powdery mildew on poinsettia *(Microsphaera euphorbiae),* greenhouse grown strawberry [Camerosa variety] with *Sphaerotheca macularis* and greenhouse tomato [Trust variety] with *Erysiphe* sp. occurred for the first time in Mississippi. Other diseases observed were target spot (*Corynespora cassiicola)* on greenhouse tomato, bacterial speck (*Pseudomonas syringe* pv. *tomato*) on tomato, Phytophthora crown rot on greenhouse tomato seedlings, Helminthosporium leaf blight on Bermudagrass (pasture), powdery mildew on fall grown cucumbers, Alternaria leaf spot on collard greens, Cercospora leaf spot on turnip greens, and root-knot nematode damage on lima beans. Several thousand (about 3,000) nematode soil samples have been received from cotton producers for analysis. The program was initiated by Rhone-Poulenc Chemical Company. New infestations of reniform and root-knot nematodes have been found in Mississippi.

Central Region
compiled by Karen Rane

Twas the time around Christmas and all through the Midwest...not a sample was stirring - time for diagnosticians to rest!!

This time of year is traditionally the slowest in clinics across the Central Region. Contrary to the rhyme, however, diagnosticians are busy with pesticide training sessions, Master Gardener presentations, report writing and all those other things that can't be accomplished during the busy season. There is still time for the occasional diagnostic puzzle, as reported below.

Agronomic crops. Several diagnosticians report processing massive numbers of soil samples for detection of soybean cyst nematode this fall and winter. Paula Flynn (Iowa) recommends screening soil as a good exercise for building biceps! Judy O'Mara reports that wheat leaf rust is overwintering in Kansas as of this date. If the fungus survives through March, there is the potential for an early start for the disease next spring. There is a lot of concern about gray leaf spot in Nebraska corn, according to Diane Merrell, but without accurate weather forecasts 9 months in advance, farmers will just have to wait and see if the disease is severe next season.

Woody Ornamentals. Samples of evergreens with winter desiccation have been relatively common in clinics throughout the region. In Ohio, Nancy Taylor diagnosed Botryosphaeria dieback in a rhododendron that had been in the landscape for 10 years.

Greenhouse Ornamentals. Sandee Gould (Minnesota) received a number of primrose samples and one asparagus fern sample (Sprengeri) that all tested positive for INSV. A cyclamen sample was received by Nancy Taylor showing red discoloration of a portion of the foliage. The plants appeared to have a ring of red leaves with normal leaves both above and below the discolored ones. Growing medium analysis showed that the medium was very low in potassium, and she suspects that this combined with some root rot caused a foliar deficiency, at least temporarily.

Vegetables. Paula Flynn received two potato samples last month, quite unusual for the Iowa clinic. One sample showed hollow heart, commonly caused by fluctuating moisture conditions during the growing season. The second sample showed browning of the tissue on the stem end, a common symptom of cold injury (the potatoes had been harvested in late October). Tomato spotted wilt was diagnosed in greenhouse tomatoes in both Kansas and Ohio. Sr. Mary Francis Heimann in Wisconsin received a sample of Belgian endive, an unusual crop for our region. The plants are grown in the field during the growing season, then dug up and raised in a dark room at 95% relative humidity. Under these conditions, the leaves that develop are white, and the vegetable is highly desired by gourmet restaurants. The sample Sr. Mary Francis received had developed a necrosis in the center (or heart) of the plant, and she suspected Fusarium heart rot. Instead of recovering Fusarium, however, she isolated a fluorescent Pseudomonad from the margin of the necrotic area. After consulting the old USDA handbook, she found listed a disease called center rot caused by *Pseudomonas cichorii*. This type of detective work is what makes our profession so interesting!

SOUTHWEST REGION

Thomas Isakeit

Arizona (Mike Matheron): During the past three months, we have seen many of the common diseases that occur in Arizona, as well as an occasional unusual plant illness. In western Arizona, *Rhizoctonia solani* was detected on peanut pods as well as decayed cauliflower roots. Root knot nematode damage and *Pythium* were observed on okra roots. *Phytophthora citrophthora* and *P. parasitica* continue to cause decline in citrus orchards throughout the state. Symptoms of bacterial rind necrosis were observed in watermelons growing in the southwestern corner of Arizona. Downy mildew was present on the cotyledons and first true leaves of one early spinach planting. It is amazing that downy mildew can develop so quickly in a dry desert

environment. *Sclerotinia minor* has caused significant losses in some early planted lettuce fields. One sample of broccoli was submitted that had downy mildew, caused by *Peronospora parasitica*. As the winter vegetable season develops, more extensive development of downy mildew can be expected to occur on broccoli, cabbage, and cauliflower, as well as lettuce.

California: Gerald Holmes (Imperial Valley): It's been exceptionally quiet on the biotic disease front this winter vegetable season. However, abiotic problems abound; mostly herbicide- or fertilizer-related, on germinating or young stands of winter vegetables. Growers are always pushing the fertilizer limits, then looking for an alternate explanation when plants are abnormal. Recent rains may bring more biotic diseases such as downy mildew of lettuce and onion.

Steve Koike (Central Coast): A new disease of the cut-flower crop lisianthus *(Eustoma grandiflorum)* has been causing losses in coastal California. The pathogen, *Fusarium avenaceum,* causes a crown and lower stem rot that results in the formation of sporodochia on the infected tissues and collapse of the plant. *Erysiphe heraclei* has been identified on the umbels of celery seed crops grown on the coast. This is the first report for this pathogen on celery in the USA. The pathogen was not observed on celery leaves. At the end of the fall growing season, outbreaks of white mold (*Sclerotinia sclerotiorum*) were reported on bell and chile pepper crops in the Salinas Valley. Ascospore inoculum infected the upper stems of these peppers and caused typical bleached lesions with white mycelia and sclerotia inside the stems. This pathogen is rarely found on this crop in coastal California. Recent rainy winter weather has caused significant bacterial head rot of broccoli in various parts of the state.

Oklahoma (B. Hudgins): One of the more interesting finds this fall was *Cerebella* sp., a hyperparasite of ergot. This fungus was found on several grasses, including bermudagrass. Other diseases of interest: Field crops: charcoal rot of soybean and okra, purple seed stain of soybean, common root rot (*Bipolaris*) of wheat; Landscape ornamentals: pine wilt (nematode) of several pines, Phytophthora blight of periwinkle, Botryosphaeria canker of Japanese maple, Pythium crown rot of pansy; Fruit: sooty blotch and flyspeck of apple; Greenhouse: Pythium root rot of poinsettia, TSWV of cineraria; Turf: lots of take-all of St. Augustinegrass (I even saw perithecia on a sample!), sting nematode injury of sod grass.

Texas: Mark Black (Winter Garden): The December '96 freeze caused significant loss of stand in some fields of direct-seeded onions and in some recently-planted cabbage in the Winter Garden area. There was also some quality loss in spinach. Incidence of beet curly top virus in the Winter Garden was unusually high in November and December 1996, and a few hundred acres were plowed up due to stand loss. (This diagnosis was confirmed by Drake Stenger, Northern Illinois University.)

Tom Isakeit (Rio Grande Valley): Inoculation and Biolog tests showed that the bacterium isolated from lesions on honeydew melon fruit growing in one field in the Winter Garden area last fall was *Acidovorax avenae* subsp. *citrulli*. This is the first report of this pathogen on this host. The Rio Grande Valley experienced a freeze in mid-December (lows to 26 degrees). Citrus was not affected, but there was some damage to sugarcane, as well as tropical landscape

plants. Winter vegetables suffered little or no damage. Alternaria leaf spot and powdery mildew occurred on turnip greens. Bacterial leaf spot was common in many pepper fields. I found a trace amount of powdery mildew (*Leveillula taurica*) in one pepper field. This pathogen is much more serious on kenaf grown in this area, however.

PACIFIC NORTHWEST
Ellen Bentley

The highlight of the 1996 Montana Plant Disease Clinic had to be searching for the *Tilletia indica* (karnal bunt) spore. Martha Bamford and Mohammed Babadoost ran 560 wheat samples for the national karnal bunt survey, but found no evidence of this now infamous disease within our borders.

In small grains, bare patch (*Rhizoctonia solani*) was common during the early season, especially in fields that were seeded soon after glyphosate application or where cheat grass was a problem. Foliar diseases (net blotch and tan spot) were severe until dry weather from mid-June until harvest helped reduce damage in many dryland areas. As our exceptionally cold, wet spring abruptly turned into a very hot, dry summer, Fusarium foot rot became the significant disease in many areas.

In Powell Co. (western MT), we diagnosed barley stripe (*Pyrenophora graminea)* on several fields of 'Medallion' barley. A producer had been selling seed of this variety to his neighbors for a number of years. Probably, the disease has been increasing in the seed lots during this time and by 1996 losses exceeded 30% in some 'Medallion' fields.

In north central MT, many wheat varieties have been showing trapped head and other abnormal growth symptoms for the past three years. These symptoms generally are associated with frost, hail, or herbicides, but symptoms were occurring regardless of whether or not these factors were present. Canadian research has suggested copper deficiencies are responsible. We conducted field trials in the Havre area to test this possibility, but found no evidence of copper deficiency. We are repeating the study on winter wheat, but continue to search for an explanation for this phenomenon.

In Deer Lodge Co., brown root rot (*Phoma sclerotiodes)* was found in an alfalfa field. This disease has not been reported in the United States!

On lawns in many parts of MT, Ascochyta leaf spot caused noticeable damage in early-mid June. The symptoms disappeared with the warmer, drier weather and most lawns recovered. Plum pockets and oak leaf blister were extremely common this season.

Melodie Putnam (OSU-Corvallis) has found and isolated a *Phoma/Ascochyta* from *Lobelia* which was suffering from a stem dieback. The exact identity of the fungus is not known, since these two genera are the garbage disposal units for pycnidial fungi with little spores, and the

mycologist I gave them to for confirmation of identification refused to be pinned down. This appears to be the first report of stem dieback in *Lobelia* caused by Phomachyta. Another interesting disease was *Cladosporium echinulatum* leaf spot of dianthus. These plants were from a nursery; this is the first time the disease has been reported from Oregon. Fusarium wilt of basil showed up again for the third consecutive year (all from different places). And finally, bacterial wilt of tomato (*Clavibacter michiganensis* spp. *michiganensis*) was found, which is very unusual for this area. Perhaps the fact that it was discovered in a pathologist's back yard renders the disease not so unusual after all!

In Eastern Oregon (OSU-Hermiston) Joy Yeager reports late blight in stored potatoes and *Penicillium, Botrytis,* black mold, and slippery skin on stored onions. One sample of rust (*Melampsora medusae*) on poplar was of interest.

This year brought a lot of the "same old problems" to the WSU Puyallup Plant Diagnostic Lab (Lenora Jones). The unusually damp, cool spring weather contributed to many leaf spots and similar diseases occurring into late summer and fall. In particular, Coryneum blight (shothole) and brown rot were diagnosed on large numbers of both ornamental and fruiting *Prunus*. Large amounts of apple scab, dogwood and other anthracnoses were present throughout the season, as well as Entomosporium leaf spots on ornamental pear and other species. A Cylindrosporium leaf spot was diagnosed on red-osier dogwood, yellow-twig dogwood, an Pacific dogwood.

In other broadleaf news, Dutch elm disease is a recurring problem in the Tacoma-Puyallup area, with two new confirmed cases and several suspect samples in which the disease was not confirmed. Phytophthora root rots were prevalent, with raspberry, rhododendron, boxwood, apple, juniper, and heather testing positive by ELISA (NEOGEN).

Various conifer species accounted for almost 20% of 1996 samples. Almost half were diagnosed with abiotic problems (primarily culture-related).

Sample numbers for turfgrass also remained high in 1996, with a broad variety of problems from home lawns and commercial situations including Fusarium patch, red thread, downy mildew, Pythium root rot, and Rhizoctonia yellow patch.

The PDL handled a total of 1863 samples in 1996. This number is slightly lower than in 1995; however samples were not accepted in December during a change of personnel. Effective December 1, 1996, Carrie Foss has taken a position with WSU's Pesticide Education Program. Her position in the PDL has been temporarily assumed by Lenora Jones. Lenora is a WSU graduate with a background in botany, horticulture, and biological sciences. Lenora can be reached at lenora@coopext.cahe.wsu.edu. (Welcome Lenora --eb)

Ellen Bentley (WSU-Prosser) reports little of interest since the September issue. Eastern Washington received it's first snow in mid-November and the record amounts abruptly ended the 1996 season. Landscapes were severely damaged by the heavy snow and subsequent ice

storms. Production agriculture has been unusually quiet, however potato planting time is just a month away! Both WSU PDL's will begin charging on March 1, 1997.

Colorado (Linnea Skoglund, CSU-Ft Collins) small grains were plagued by head scab (*Fusarium*) Loose smut and streak (WSMV). Black chaff *(Xanthomonas)* was observed on millet and wheat. Bacterial leaf blight (*Pseudomonas)* occurred on wheat and corn.

Potato late blight populations were all US8, A2. The seed producing San Luis Valley remains late blight free. A fungal canker of greenhouse tomato is undergoing pathogenicity studies (*Botrytis* vs *F. solani*).

Most landscape problems continue to be abiotic. Increased occurrence of blister rust reflects the increased use of white pines in landscapes.

Reports were not received from North Dakota (Is it any wonder? Hey Marty--have you dug out yet?), Utah or Wyoming. The Wyoming position is still open and currently advertised.

APHELENCHOIDES AS PATHOGENS OF ORNAMENTAL PLANTS

Robert A. Dunn, Extension Nematologist, University of Florida

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This literature review emphasizes foliar nematodes as pathogens of ornamentals, selectively compiled from CABI CD-ROM files from 1972 to early 1996. A recent CABI publication offers a complete review of taxonomy of the genus *Aphelenhoides* and taxonomy and brief comments on bionomics of four important species (*A. besseyi, A. bicaudatus, A. fragariae, A. ritzemabosi*) on pp. 49-67:

> Hunt, D. J. 1993. Aphelenchida, Longidoridae and Trichodoridae, Their Systematics and Bionomics. CABI. 352 pp. ISBN 0 85198 758 3 (approx. $130 in 1994).

Given the completeness of the above-named volume regarding taxonomy, the following review emphasizes biologically-oriented titles. Most *Aphelenhoides* spp references could be divided among four groups: 1) species known or thought to be primarily fungal feeders, including those that are pests of cultivated mushrooms; 2) *A. besseyi* as the rice white tip pathogen; 3) foliar nematode pathogens of strawberry; 4) foliar nematodes as pathogens of ornamentals. Since the focus of this review is the roles of *Aphelenchoides* spp. as pests of ornamentals, I have referenced only a few papers related to fungal feeders, *Aphelenchoides* spp. as pathogens of rice, and others not directly related to ornamentals except those whose topic may also bear on ornamentals, such as chemical control agents, and heat therapy. Similarly, few papers relating specifically to foliar nematodes as pests of strawberry are cited from an extensive literature. *A. besseyi, A. fragariae,* and *A. ritzemabosi* all are reported to cause diseases of strawberry wherever the crop is grown. The economic importance of that crop has stimulated a disproportionate amount of research attention to management of these nematodes in direct relation to it, so many of the chemical control titles cited refer to strawberry as the host for which the work was done.

For ease of handling, most references are placed arbitrarily in only one of following categories, a few in two; most titles are given in English, regardless of original language of publication, and some of the arcane punctuation and other artifacts of CAB abstracts are left intact if they were not considered detrimental to understanding or minimizing space taken by each abstract.

CATEGORIES

Basic biology

Includes physiological and behavioral adaptations of *Aphelenchoides* spp. and descriptions of methods for culturing and otherwise working with them and survey/sampling methodology for assessing populations and disease caused by them.

Control

Includes traditional chemical nematicides, plant extracts, physical methods, and resistance.

General guides

General extension pamphlets and general technical reviews of genus or species (e.g., the CIH descriptions of species).

Hosts

Reports pertaining to the range of plants susceptible to foliar nematodes. Foliar nematodes have been reported to infect many ornamental plant species in many families; further study is likely to expand the list.

Microbial interactions:

Foliar nematodes have been reported to be part of disease complexes with bacteria and fungi; pre-inoculation of common bean with mycorrhizal *Glomus mosseae* reduced their susceptibility to *Aphelenchoides ritzemabosi* and *Ditylenchus dipsaci*.

Taxonomy

A few titles are cited, including a few on morphology and anatomy, but extensive formal coverage is best found in Hunt, 1993, cited above. The titles given illustrate efforts to use criteria other than traditional anatomy/morphology to distinguish among *Aphelenchoides* species, including serology, karyotype, esterase and protein patterns, and rDNA differences. Arguments are made against existence of clear races in *A. fragariae* and *A. ritzemabosi*, and interspecific hybridization is reported.

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The Big Red Book Updated! Or, Something Useful on the WWW

Melodie Putnam, Oregon State University

Drivel on the Web is common and one could spend many hours investigating the Waco Museum (keywords: black helicopters) and the JFK Assassination home page (including autopsy pictures), but for plant pathologists, information of value is scarce.

Fortunately, things are looking up, and over the past couple of years the items of interest are increasing in number. A real gem is the on-line update of the reference Fungi on Plants and Plant Products in the United States by David Farr, Gerald Bills, George Chamuris and Amy Rossman. In addition, other information is available on other databases accessible at the same Web site. The following information was supplied to me by Dr. David Farr of the Systematic Botany and Mycology Laboratory of the USDA at Beltsville. This information is also available at their Web site.

Before going to the hard stuff, some comments on accessing the database. I have occasionally had trouble getting into the databases using the telnet fungi route. For some reason the host is sometimes not recognized. If this happens and you have access to Netscape or another Web navigator, use the Web address. Trying the telnet site at a later time will often allow access.

Databases at the U.S. National Fungus Collections

Databases developed at the U.S. National Fungus Collections provide access to information about fungi, primarily those associated with plants or otherwise of agricultural importance. These databases are maintained and expanded by members of the Systematic Botany and Mycology Laboratory, USDA-Agricultural Research Service, Rm. 304, B011A, 10300 Baltimore Avenue, Beltsville, MD 20705-2350. Information about them is available through the WWW site <http://nt.ars-grin.gov>. The databases can be accessed directly using <telnet fungi.ars-grin.gov> or 192.239.68.100 through the two public menus described below. Terminal emulation must be set to VT100, the default setting at the terminal emulation prompt. Other settings for terminal emulation are listed after this prompt.

To access the databases after entering the telnet name, one must type the words <login user> with a password of <user>. The USER menu will appear. To access the APHIS menu with additional databases for plant-associated fungi from throughout the world, type <login aphis> with the password <aphis>.

Two public menus provide access to databases maintained at the U.S. National Fungus Collections, namely the USER menu and the APHIS menu. The menu items are mentioned briefly here with a more detailed description presented below. Both menus provide access to

the databases of Fungi on Plants and Plant Products in the United States, references for the identification of plant pathogenic fungi, and specimen data in the U.S. National Fungus Collections. The USER menu also includes access to the database of books in the J.A. Stevenson Reference Room, the Index to Saccardo's Sylloge Fungorum, the IMI Index of Fungi, 1940-1980 and the database of type specimens of C.H. Peck, and the membership directory of the Mycological Society of America.

In addition to the databases on both menus, the APHIS menu includes access to the database of Q37 hosts, primarily horticultural crops, Rhododendron, and conifers, and about 200,000 unedited reports of fungi on plants from the world literature. The APHIS menu has an option for searching all of the fungal databases. The accepted name of a fungus can be determined by searching in the USER menu under Option 1 for Fungi on plants and plant products in the United States or, for more accepted fungus names, search in the APHIS menu under Option 1 for Fungi on Q37 hosts and Option 2 for Fungi on plants and plant products in the United States.

Following is a detailed explanation of the databases available from the U.S. National Fungus Collections.

The USER Menu

Options 1-4 provide data from Fungi on Plants and Plant Products in the United States

1. List Host-Fungus distributions.
2. List taxonomic, nomenclatural and other misc. information about fungi.
3. View the literature used in no. 1 above.
4. List taxonomic and nomenclatural information about vascular plants.

Options 5-12 allow access to other databases.:

5. Search the literature file maintained by the APHIS Mycologist.
6. View the literature citations in the book Literature Guide for Identification of Plant Pathogenic Fungi.
7. Search for books in the Mycology Library
8. Obtain information on specimens in U.S. National Fungus Collections
9. List citations from Saccardo's Sylloge Fungorum
10. Search the IMI Index of Fungi, 1940-1980 or data on Peck types.
11. Mycological Society of America Directory
12 Leave the system

Options 1-4.

The databases accessed through these options were used to publish a 1152-page, hard copy book, Fungi on Plants and Plant Products in the United States by D. Farr, G. Bills, G.

Chamuris & A. Rossman (1989). The book can be purchased for $89 from the American Phytopathological Society Press, 3340 Pilot Knob Road, St. Paul, Minnesota 55121-2097 or call (in the United States) 1-800-328-7560.

The database of Fungi on Plants and Plant Products in the United States includes the distribution and host range by state based on literature from over 4,000 sources, primarily published between 1950-1987. After data from the literature was entered, each of the fungus and host names was critically reviewed. This review was done to determine the currently accepted or correct name of the fungus and host, list important synonyms and names of alternate states, provide additional literature important in understanding the biology and taxonomy of the fungus, and indicate the distribution and host range on a worldwide basis for the fungus as well as determine and list the common names for the vascular plant hosts. The information gained in the review process was then used to synthesize a listing based on the reports from the literature. Another major result of the review process was the development of a database with detailed information about each of the fungal species reported from the United States.

Option 1. List Host-Fungus distributions.

This option searches for either the fungi on a particular host or the vascular plant hosts of a particular fungus, the lists the distribution in the United States. About 9,000 vascular plant hosts and 13,000 fungal species are included. The data can be searched using the scientific name of the host genus, host genus and species, fungus genus, or fungus genus and species. If only the common name of the host is know, the scientific name can be determined by searching in Option 4. If an obsolete scientific name is entered, the database will automatically correct the name and search under the accurate scientific name. This database includes 78,000 unique host-fungus combinations based on 4,000 literature sources. All names were reviewed for scientific accuracy. Inconsistencies in host ranges are noted.

Option 2. List taxonomic, nomenclatural and other misc. information about fungi.

This second option allows the database on the fungi to be searched by genus or genus and species. The accepted fungal names are listed with their accurate scientific names, authors, basionym, synonyms, alternate state names, geographic distribution both worldwide and by state, host range, and relevant literature for identification. This option is useful for determining the accepted name of a fungus as well as the alternate state names.

Option 3. View the literature used in no. 1 above.

After a search using option 1, all information associated with the results of that search will be displayed. This third option lists all of the literature on which the distribution reported in option 1 was based. In addition literature can be obtained on a particular host or fungus. The literature can also be selected by author.

Option 4. List taxonomic and nomenclatural information about vascular plants.

This option selects information about both the scientific and common names of the vascular plant hosts. By searching on the common name the scientific name of a vascular plant host can be determined. In addition, for a particular vascular plant genus all species can be selected with their accurate scientific names.

Options 5-11.

The remaining options refer to other databases maintained at the U.S. National Fungus Collections. Most of them are being continuously updated and changed as new information is added.

Option 5. Search the literature file maintained by the APHIS Mycologist

The mycologist for the Animal and Plant Health Inspection Service (APHIS), Dr. Mary E. Palm, reviews the worldwide literature received at the ARS/SBML for important references on world distribution, taxonomy and biology of plant pathogenic fungi and bacteria. At present more than 16,000 references have been entered with additional references added periodically. Keywords for each piece of literature are derived primarily from fungus and host scientific names, and country names. Records can be retrieved by using author names, year of publication, or keywords. Many of the references in this file have not yet been incorporated into the other databases on host-fungus distributions.

Option 6. View the literature in the book Literature Guide for the Identification of Plant Pathogenic Fungi

This database was published as the hard copy book A Literature Guide for the Identification of Plant Pathogenic Fungi by A.Y. Rossman, M.E. Palm, and L.J. Spielman in 1987. It can be purchased for $26 from American Phytopathological Society Press, 3340 Pilot Knob Road, St. Paul, Minnesota 55121-2097 or (in the United States) call 1-800-328-7560. The database can be searched using one or more key words or author names and includes comments about each genus and a listing of important fungal diseases caused by species in that genus.

Option 7. Search for books in the Mycology library

A database of the over 4,000 books in the John A. Stevenson Mycology Library has been developed. Although these books cannot be sent on loan, inquiries about their contents can be directed to <Herbarium@fungi.ars-grin.gov> or mailed to Mrs. Harriet Gladish, Systematic Botany and Mycology Laboratory, USDA-Agricultural Research Service, Rm. 304, B011A, 10300 Baltimore Avenue, Beltsville, MD 20705-2350.

Option 8. Specimen data from the U.S. National Fungus Collections.

The U.S. National Fungus Collections is the repository for over one-million fungal specimens world wide and is the largest such collection in the world. Information associated with these specimens constitute an enormous data resource, especially about plant-associated fungi. Data from the labels of about 600,000 or about 60% of the one-million specimens in the U.S. National Fungus Collections have been entered into a computer. These labels have information on the host on which the fungus was found and the locality in which the specimen was collected. Sixty percent of these specimens are from the United States and thus represent a large body of information about the fungi in this country. Data entry for some groups has been completed namely the Uredinales (rusts), Ustilaginales (smuts), Polyporales (polypores), Deuteromycetes (imperfect fungi), Ascomycetes and C.G. Lloyd Collections. Data from about 50,000 specimens are entered annually as well data from the approximately 10,000 newly accessioned specimens each year. Requests to borrow specimens can be sent via e mail to <Herbarium@fungi.ars-grin.gov> or mailed to Mrs. Loretta Alessandrini, U.S. National Fungus Collections, Systematic Botany and Mycology Laboratory, USDA-Agricultural Research Service, Rm. 304, B011A, 10300 Baltimore Avenue, Beltsville, MD 20705-2350.

Option 9. Index to Saccardo's Sylloge Fungorum

This database is an index to all the fungal names included in Saccardo's 26 volume work, Sylloge Fungorum, published from 1881-1931 and 1972. About 117,000 fungal names are indexed, often with one or more citations. This database was published in 1993 as a hard copy book Index to Saccardo's Sylloge Fungorum Volumes I-XXVI IN XXIX 1882-1972 by C.F. Reed and D.F. Farr. It is available for $60 (paperback) or $75 (hardback) from Clyde Reed Press, 122 Main St., Darlington, MD 21034-1416.

Option 10. Search the International Mycological Institutes' Index of Fungi, 1940-1980 or data on Peck types.

This option accesses a database to the Index of Fungi volumes 1-4 covering 1940-1980. It can be searched by genus or species of fungus and gives the reference to the Index of Fungi volume and page. The database of Peck types is a computerized list of data associated with the type specimens of taxa described by Charles Horton Peck. This database and the specimens are maintained at the New York State Museum in Albany, NY. For further information or to obtain specimens on loan, write to: Dr. John H. Haines, Herbarium, Biological Survey, New York State Museum, Albany, NY 12230 or e mail: jhaines@museum.nysed.gov.

Option 11. Leave the system.

This option should be used to exit the USER menu and return to the colon prompt from which one must type <LO> to leave the computer system.

The APHIS menu

To use the APHIS menu listed below, one must type <login aphis> with the password <aphis>. Options 2, 4, and 5 are the same as for the USER menu and are explained above.

1. Fungi on Q37 hosts (Plants in Growing Media).
2. Fungi on Plants and Plant Products in the U.S.
3. Unedited data from the literature.
4. Fungal systematic literature.
5. Specimens in the U.S. National Fungus Collections.
6. Search all databases for a specific fungus.

Option 1. Fungi on Q37 hosts (Plants in Growing Media).

As part of a project for the Animal and Plant Health Inspection Service, information has been compiled on a worldwide basis for the fungi found on some Q37 hosts, primarily horticultural crops including members of the Bromeliaceae, the genus Rhododendron and conifers. Information is included on about 3,300 fungi and 89 host genera in this database. The approach and format are identical to that used in the Fungi on Plants and Plant Products in the United States. The database can be queried for fungi reported on a particular host as well as for data on the taxonomy, worldwide distribution, and host range of each fungus.

Option 2. Fungi on Plants and Plant Products in the U.S.

This database is a list of the fungi reported on vascular plant host in the United States, data on the taxonomy of each fungus, and notes about the worldwide distribution and host range of each fungus. Common names, family names and synonyms are available for each host name. This option is explained in detail under the USER menu discussion, Options 1-4.

Option 3. Unedited data from the literature.

Reports from the literature of fungi on vascular plant hosts from outside the United States are being entered daily. In surveying the literature for the Q37 database it was decided to enter all of the reports from each literature source. The database includes 200,000 reports of fungus on plants from throughout the world. Most of the data in this file has not yet been reviewed and edited by SBML personnel. Thus, there is no information about synonymy, common names, or distribution on other hosts.

Option 4. Fungal systematic literature.

The APHIS mycologist's bibliographic file referencing literature containing information about the taxonomy, distribution and host ranges of plant pathogenic fungi and bacteria. This option is explained in detail above.

Option 5. Specimens in the U.S. National Fungus Collections.

Label data from over 600,000 fungal specimens have been computerized including the Uredinales, Ustilaginales, Fungi Imperfecti, Polypores, Ascomycetes, and G.C. Lloyd collections. These records are helpful in providing additional information about host-fungus distributions. This option is explained in detail above.

Option 6. Search all databases for a specific fungus.

This option will search Options 1-5 including the world literature and the database of the U.S. National Fungus Collections for all records and specimens.

Questions and suggestions about these databases or problems gaining access to the system should be addressed to those listed below:

Amy Y. Rossman, Director David F. Farr
U.S. National Fungus Collections U.S. National Fungus Collections
Syst. Botany and Mycology Lab Syst. Botany and Mycology Lab
USDA-ARS B011A, Rm. 304 USDA-ARS B011A, Rm. 304
10300 Baltimore Ave. 10300 Baltimore Ave.
Beltsville, MD 20705 USA Beltsville, MD 20705 USA
tel. 301-504-5364 tel. 301-504-5274
fax 301-504-5810 fax 301-504-5810
e-mail: amy@fungi.ars-grin.gov e-mail: dave@fungi.ars-grin.gov

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Other Web Sites

Some of the locations of interest I've found are listed below. This is not intended to be a complete list but is an eclectic collection.

Plant Virus Descriptions

This site has detailed descriptions of nearly all known plant viruses, including data on host range; transmission and control; geographical distribution; taxonomy and relationships; physical, chemical and genomic properties; and selected literature references. There are also tables listing over 1500 host plant species and their reported susceptibilities to these viruses. The address is:

http://biology.anu.edu.au/Groups/MES/vide/

The address is case sensitive so be sure to type it as listed.

This site is very helpful, especially since the CMI/IMI Descriptions of Plant Viruses hasn't been updated since the late 1980's.

EXTOXNET

This is the Extension Toxicology Network. On it are various types of toxicology information including issues pertaining to pesticides, pesticide information profiles, toxicology information briefs, and toxicology newsletters.

ALMANAC access: send the message:
send extoxnet catalog to:
almanac@sulaco.oes.orst.edu
Leave the subject line blank. The message will return to your e mail address a description of the types of documents which are available through almanac and how to order them.

WWW access: http://ace.orst.edu/info/extoxnet/

Pesticide labels and material safety data sheets:

DuPont, Bayer, Monsanto, and Rhone-Poulenc have their labels and MSDS materials available on the Web, with others to come. You must install the free Adobe Acrobat Reader to view the information however. To do this, click on the Acrobat icon that comes up on the screen after clicking on one of the company's logos.
WWW access: http://aginfo.trinet.com
This site is good if you don't have access to the label books.

Ginseng

Agriculture and Agri-food Canada has a ginseng web page. The address of the home page for Ag Canada, from which the ginseng page can be reached is:
WWW access: http://res.agr.ca/lond/pmrc/pmrchome.html

Cooperative Extension Service Resources

This site connects you with many state extension service web sites. Search here for fact sheets, clip art, and various other offerings of the extension service.
WWW access: http://www.esusda.gov/partners/ces-locs.htm

Diagnostics

This is a small subset of the same group listed in *PDQ* as reference diagnosticians; the people listed have agreed to be put on-line. The list is part of a World Wide Web searchable directory sponsored by Agdia.
To add your name or clinic to the database , contact dmarti@agdia.com
See also the web site at: http://www.agdia.com/diagnostic/

Newsgroups

I have found newsgroups to be marginally helpful. Most of the messages that come across the ether are not pertinent to my areas of interest (e.g. requests for marketing information). The newsgroups do, however, represent an audience of growers, researchers, and extension people who are knowledgeable in the given topic area, so that a query will go to the people

who are most likely to be helpful. The more obscure the topic, the greater help the newsgroup can be.

USDA Newsgroups

Apples

This mailgroup deals with all aspects of apple production and marketing.

To subscribe, send a message to:

apple-crop@orchard.uvm.edu

type the word "help" in the subject line

Also visit the "Virtual Orchard" at http://orchard.uvm.edu

For further information contact: cowgill@aesop.rutgers.edu (Win Cowgill)

Forestry

This mail group is used to promote the awareness and communications of extension personnel who work in forest management.

To subscribe: send an e-mail message to:

almanac@esusda.gov

In the body of the message type:

subscribe forest-net <yourFirstname Lastname>

For further information contact llarson@esusda.gov (Loren R. Larson)

Small fruits

The Smallfruit mailgroup is a forum for discussing all aspects of small fruit production; crops covered include blueberries, brambles (blackberries, raspberries, and others) grapes, strawberries, and other small fruits.

To subscribe: send an e-mail message to:

almanac@esusda.gov

In the body of the message type:

subscribe smallfruit-mg <your Firstname Lastname>

For further information contact: rgomez@esudsa.gov (Rick Gomez) or johnsonj@msuces.canr.msu.edu (James Johnson)

Vegetable crops

A forum for open discussion of current developments in vegetable production technology, vegetable pest management, post-harvest handling and marketing.

To subscribe: send to:

majordomo@reeusda.gov

In the body of the message type:

subscribe veg-prod

For further information contact: vanvranken@aesop.rutgers.edu (Richard VanVranken)

Florinet

This mailgroup deals primarily with production methods, pests, and diseases of greenhouse floral crops.

To subscribe, send a message to:
listserv@agvax2.ag.ohio-state.edu
Leave the subject line blank and in the body of the message type:
subscribe florinet

Diagnost

This newsgroup is a forum for discussion of issues relating to the diagnosis of pathogens and pests. The list membership covers not only plant pathologists but also medics and vets. This is because although the subjects are different, the techniques (e.g. ELISA, PCR) and the problems associated with them are the same.

To subscribe to this list send a message to
biosci-server@net.bio.net
Type the message:
subscribe diagnost
Leave the subject line blank.

Panax

The University College of the Cariboo in Kamloops, B.C. and the B.C. Ministry of Agriculture have established a discussion group for people involved in the production, processing, and use of *Panax* spp. and Siberian ginseng.

To subscribe, send a message to:
mailserv@cariboo.bc.ca
In the body of the message type:
subscribe panax <yourFirstname Lastname>
For additional information contact aoliver@galaxy.gov.bc.ca (Al Oliver, Provincial Ginseng Specialist, B.C. Ministry of Ag.)

Peach

A listserver for those involved with peach production.
To subscribe, send to:
listproc@hubcap.clemson.edu
Type in the body of the message:
subscribe peach <yourFirstname Lastname>
For additional information contact cgrsch@clust1.clemson.edu (Glyde Gorsuch)

Miscellaneous

ATCC

The American Type Culture Collection catalog is accessible on-line. Visit their site at:
http://www.atcc.org/

USDA Extension Service/Land Grant Directory

The electronic form of the USDA Extension Service Land Grant Directory published in Washington, DC. The Land-Grant and USDA Directory is a listing of CES information and technology staffs at land-grant colleges and universities; ES-USDA's Communication, Information, and Technology Staff; USDA Information Heads; national organizations; international centers and agricultural communicators.

For the current Directory, send a message to

almanac@esusda.gov

In the body of the message type:

send directory

For more information, contact Judy Rude at jrude@esusda.gov, or call 202-720-4242.

MYCONET

Serves four internet mailing lists: 1) mycological discussions; 2) medicinal uses of fungi; 3) educational applications of fungi; and 4) development of mycological databases.

To subscribe: send an e-mail message for updated information and instructions on how to use the listserver to:

postmaster@myconet.org.

Reregistration notification network

The intent of this network is to inform interested parties of recent or impending pesticide use cancellations, tolerance revocations, and other items of agricultural interest.

To subscribe, send a message to ksmith@asrr.arsusda.gov. This is a live person contact and not a computer mediated server.

Watling, Roy
How to Identify Mushrooms to Genus V: Cultural and Developmental Features
Mad River Press, Inc. Eureka CA 169 pp.
ISBN 0-916422-17-8 $20.75

This title represents an unusual compilation of mycological information on the culture and cultural characteristics of the agarics. The author presents a variety of culture media, nutrient and buffer solution and antibacterial agents for culturing these fungi. Relevant stains, fixatives and sectioning protocols are also given. Instructions on field collection, preservation and isolation from vegetative or reproductive tissue as well as soil, wood samples and mycorrhizal structures are provided. Pure cultures of these agarics are described in terms of vegetative and reproductive stages as well as the preservation of pure cultures and their use in genetic studies. Laboratory exercises with 12 genera of fungi are presented that would certainly generate interest as youth projects or lab components of mycology laboratories. The glossary, literature list, index and included black and white photographs compliment the text well. Again this is not a mainstream diagnostic aid but does compile unusual information and resources on the culture of the higher fungi.

Largent, David L. and Timothy J. Baroni
How to Identify Mushrooms to Genus VI: Modern Genera
1988. Mad River Press, Inc. Eureka CA 277 pp.
ISBN 0-916-422-76-3 $22.95

This last volume of this set broadens the scope of the Friesian keys provided in volume 1. Part 1 contains keys to families and to modern genera of mushrooms based upon microscopic features only. Part 2 contains a generic summary for each genus that integrates macroscopic, microscopic and habitat characteristics. Important characteristics are presented in bold type and references to species keys and resources with text or plates are presented for each genus. Part 3 discusses mushroom identification using microscopic features and stature types. Genera are presented by stature type and spore color in a tabular format. This is followed by a dichotomous key to the modern genera of mushrooms. The title finishes with a thorough index of taxa and terms used throughout the text. Several appendices conclude the work that present short dichotomous keys focusing upon habitat or substrates for mushroom genera. Access to just the genera-related keys and illustrations via literature citation more than justified the cost of this title without even considering the abundant keys.

Erratum: PDQ XVII Number 2
The book review for "Fungi on Rhododendron: A World Reference" by Farr, Esteban and Palm had a typographic error. The line "...25 year gap in literature coverage" was incorrectly printed. The data gap in literature was approximately 2.5 years. Sorry! G.W.S.

CLASSIFIED

BOOKS FOR SALE

1. Darrow, G.M. The Strawberry - History, Breeding and Physiology. 1966. The New England Institute for Medical Research. 447pp. $27.50

2. Eckstein, Oscar, A. Bruno, and J.W. Turrentine. Potash Deficiency Symptoms. 1937. Berlin:Verlagsgeslischaft für Ackerbau. 235pp. $15.00

3. Ellis, J.B. and B.M. Everhart. The North American Pyrenomycetes 1892. Ellis and Everhart, Newfield, NJ. 791pp. $85.00

4. Graf, Alfred Byrd. Exotic Plant Manual - 4th ed. 1974. Rogers Company. 840pp. $27.50.

5. Hanson, A.A. & F.V. Juska. Turfgrass Science. 1969. American Society of Agronomy, Inc. 715pp. $22.50

6. Hawksworth, F.G. and D. Wiens. Biology and Classification of Dwarf Mistletoes (*Arceuthobium*) - Ag Handbook No. 401. 1972. U.S. Department of Agriculture Forest Service. Washington, D.C. 234pp. $25.00

7. Headstrom, R. Garden Friends and Foes. 1954. Ives Washburn, Inc. 219pp. $7.50.

8. Hepting, George H. Diseases of Forest and Shade Trees of The United States. Ag. Handbook No. 386. 1971. U.S. Department of Agriculture Forest Service. Washington, D.C. 658pp. $17.50

9. Hotson, J.W. Key to the Rusts of The Pacific Northwest Vol. 3. 1934. University of Washington Press, Seattle Washington. 193pp. $22.50

10. Leach, J.G. Insect Transmission of Plant Diseases. 1940. McGraw-Hill Book Company, Inc. 615pp. $30.00

11. Peairs, L.M. Insects Pests of Farm, Garden & Orchard. 4th ed. John Wiley & Sons, Inc. - 1941. 549pp. $12.50

12. Peattie, D.C. A Natural History of Western Trees. 1953. Bostoni Houghton Mittlin Co. 751pp. $20.00

13. Rankin, W.H. Manual of Tree Diseases. 1918. The MacMillan Company. 398pp. $27.50.

Please add $2.00 per book for postage and handling in the U.S. and Canada. First come, first served. To order contact: G.W. Simone 352-392-1795 FAX 352-392-3438

JOB ANNOUNCEMENT

PLANT PEST DIAGNOSTICIAN NDSU EXTENSION SERVICE
NORTH DAKOTA STATE UNIVERSITY, FARGO ND

APPLICATION DEADLINE: March 15, 1997 or until suitable applicant is found. Position is available immediately.

POSITION DESCRIPTION: Assumes responsibility for plant pest diagnosis, coordination of seed pathogen testing services, and teaching introductory plant pathology laboratories. The position is classified as a full time non-tenure track extension associate. A Master's degree in Plant Pathology, Plant Protection, Plant Health Technology or closely related field is required with supporting course work in entomology, crop, weed and soil science desirable. Knowledge or experience with modern diagnostic techniques (e.g.; serology, electrophoresis, PCR, etc.) and pathogen identification is desirable. The opportunity exists for an applicant to actively pursue a Ph.D. program in Plant Pathology or closely related field in combination with this job. Salary will be commensurate with experience and responsibilities. NDSU is an equal opportunity employer with a strong fringe benefit package, including, Group health and life insurance, TIAA CREF retirement plant, Workmen's Compensation, annual and sick leave according to University policy. Tuition waiver for course work.

Further information may be obtained by contacting:
James R. Venette, Interim Chair
Department of Plant Pathology
North Dakota State University
306 Walster Hall, Box 5012
Fargo ND 58105
701-231-8362
jvenette@plains.nodak.edu

Oklahoma Cooperative Extension Service
Division of Agricultural Sciences and Natural Resources
Oklahoma State University
Department of Plant Pathology • 110 Noble Research Center
Stillwater, Oklahoma 74078-9947 • (405) 744-5643

December 19, 1996

Dear PDQ subscriber:

Greetings! I will be starting as the Plant Diagnostics Quarterly (PDQ) editor in January 1997. For my first task, I would like to request that YOU write an article for the PDQ. Do you have any diagnostic tips, media, or techniques that you'd like share with the PDQ subscribers? Are there any techniques, etc. you'd like to read about in the PDQ? Please contact me if you are willing to write an article, have information to share, or if you have suggestions for articles or information that you would like to see in the PDQ. Also, fact sheets are needed for enclosures. See the details below on how to send them.

A major role of being editor is to gather information and compile it into a camera-ready format. The following information will give the guidelines for how I would like to receive material for future issues.

Guidelines to Contributors

Submission of articles:

Articles may be submitted in any of the following manners:

1) As a "document" or "note" attached to an email message. Send these articles to Betsy Hudgins at **hudgins@okway.okstate.edu**. I use Microsoft Word 7.0a but can accept documents from earlier versions of Microsoft Word or WordPerfect versions 5.1 or higher.

2) As a diskette (3.5") with PC formatting if possible.
Mail to: Betsy Hudgins
110 NRC
Department of Plant Pathology
Stillwater OK 74078-3032
Please include a hardcopy of the article with the disk. Disks will be returned.

3) As a camera-ready hardcopy. Follow manuscript guidelines below. Mail to Betsy Hudgins at the above address.

Information for the classified section (including job announcements and workshops) can be submitted in any of the above manners or as a email message.

Manuscript Format:

Titles: Center in Boldface; Author(s) and institution(s) should be centered below the title.
Margins: 1 inch (Top, Bottom, Left, Right)
Page Numbers: Do not include (although you may lightly pencil page numbers on any hardcopies that are sent)
Font: Something easy to read, such as Times New Roman, 12 point
Spacing: Single-spaced
Latin binomials: Italicized
References: Cite at the end of the article using a consistent format, such as that used in Plant Disease.
Printing: If sending a hardcopy, laser printed articles are preferred; type needs to be clear and dark enough to be reproduced well.

Enclosures:

Send 200 copies of fact sheets to be used as enclosures in the PDQ to:

Gail Ruhl
Managing Editor - PDQ
Dept. of Botany and Plant Pathology
1155 Lilly Hall
Purdue University
West Lafayette, IN 47907-1155

If you are unable to supply 200 copies, send a few to Gail Ruhl (at the above address) and request that they be duplicated. Fact sheets with pictures that are to be copied must be of adequate quality to enable good reproduction of the photographs.

PDQ Deadline Dates For 1997

ISSUE:	MARCH	JUNE	SEPTEMBER	DECEMBER
Copy Due*:	2/17/97	5/19/97	8/18/97	11/17/97
Printing Date:	3/10/97	6/9/97	9/8/97	12/7/97

* - Date by which all information must be received.

I look forward to hearing from you!

Betsy Hudgins, Editor
hudgins@okway.okstate.edu