WHY LATIN NAMES OF PATHOGENS CHANGE[1]

by W.A. Sinclair

Abstract. Most changes in Latin names of pathogens result from research in systematic botany, microbiology, mycology, and nematology. Name changes are made according to, and often because of, international rules of nomenclature. New names for familiar organisms may be rejected on scientific or nomenclatural bases but should not be rejected merely because mastery of new names is inconvenient. A table of name changes proposed or adopted for tree pathogens is presented.

Résumé. La plupart des changements dans les noms latins de pathogènes résultent de recherches en botanique systématique, en microbiologie, en mycologie et en nematologie. Les changements de noms sont faits en accord et à cause des règles internationales de nomenclature. Les nouveaux noms pour les organismes familiers peuvent être rejetés sur des bases scientifiques ou de nomenclature, mais ne devraient pas être rejet's simplement à cause des inconvénients à maîtriser de nouveaux noms. Un tableau présentant des changements de noms proposés ou adoptés pour les pathogènes des arbres est présenté.

Changes in the Latin names of tree pathogens sometimes vex plant pathologists as well as tree care specialists. It may be incovenient to learn new names for familiar organisms, but this learning is necessary if one is to keep up to date professionally. Often, however, users of Latin names remain unaware of proposed changes or do not know why, where, or by whom the proposals were made. Thus many proposed changes do not receive timely consideration. While gathering information for a reference book about diseases of trees and shrubs (74), I noticed hundreds of changes that have been proposed for the names of tree pathogens. Adoption of many of the new names has been slow (decades in some cases), partly because the changes have occurred since previous reference books on plant diseases were prepared, and partly because nomenclatural changes are often published inconspicuously in journals and paper series devoted entirely to taxonomic research. The purpose of this paper is to promote the consideration of new names by describing the most common situations that necessitate name changes and by presenting a compilation of proposed changes.

People who change the names of plant pathogens usually have substantial reasons for doing so. These reasons fall into one or more of six categories: 1) The pathogen is reclassified in a different genus. 2) A group of similar species is consolidated under one species name. 3) A heterogeneous species is divided into several new species. 4) The sexual state is discovered for a fungal pathogen that was previously known only in an asexual state. 5) An older validly published name for a species is discovered and under rules of nomenclature must be applied as the legitimate name. 6) The pathogen was originally misidentified.

Except for the sixth case, the naming and renaming of plants, animals, fungi, and prokaryotic organisms (bacteria and mollicutes) is governed by carefully crafted rules. Those for naming fungi, for example, are part of the International Code of Botanical Nomenclature, to which systematic botanists and mycologists adhere. This code is reviewed and updated from time to time at international botanical congresses. (Separate codes, similar in general operation, govern the naming of animals and prokaryotic organisms.) Because most tree pathogens are fungi, I will describe some of the most common provisions of the botanical code. Although it is lengthy (472 pages) and legalistic, the rules that most often affect names changes are relatively few and simple in principle. For exceptions and fine points, and especially for what the code really says, I refer readers to the code itself (84).

Some Key Provisions of the Code

•When a species is first given a Latin binomial name, a valid description must be published and one or more preserved specimens deposited for posterity. The author's name, which may be ab-

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breviated, is appended to the Latin binomial. The second part of the Latin binomial (known as the final, or specific, epithet), together with the author's name, is linked permanently to a type specimen. This specimen is one of those on which the description was based. It is deposited in a herbarium of the author's choice, where other researchers can obtain it for examination. The linkage of epithet to specimen ensures that the new species name will be applied only to specimens similar to the type. Names without descriptions and type specimens are invalid.

For example, when the pine needle cast fungus now known as *Lophoderimium pinastri* (Schrad. ex Hook.) Chev. was first described in 1799 by Schrader, he named it *Hysterium pinastri,* and he deposited a type specimen in a European herbarium. Chevallier transferred *H. pinastri* to his new genus *Lophodermium* in 1826. During the next 150 years, several other *Lophodermium* species that colonize pine needles were recognized, but none was as widespread and destructive as *L. pinastri.* When severe outbreaks of pine needle cast occurred in North America in the 1960s and early 1970s, however, studies of the lophodermia on pine needles showed three species to be present where only one had been thought to occur. The most damaging species infected first-year needles and caused them to die and drop early in the second year. The other two species infected older needles and caused little harm to the pines. Representatives of the three species were compared with the type specimen, and it turned out that one of the weak pathogens, not the virulent one, matched the old type specimen of *H. pinastri.* Most of the damage was being caused by a fungus that had not previously been described. The unimportant fungus kept the familiar name because of the linkage of name to type specimen. Thus *Lophodermium pinastri,* contrary to the beliefs of the previous century, came to be known as a weak pathogen that attacks only the oldest needles and causes insignificant defoliation. The newly recognized species, responsible for the long-known disease, was named *Lophodermium seditiosum* Minter et al. (54).

•If a species is described and named more than once, the oldest validly published specific epithet has priority.

Consider, for example, the fungus that causes Dothistroma needle blight, also known as red band needle blight, of pines. The pathogen was described from Illinois in 1941 and was named *Dothistroma pini* Hulbary. This name was used for many years until taxonomic studies by Morelet revealed that the same fungus had been validly described in Europe in 1911 by Doroguine as *Cytosporina septospora* Dorog. (26). Because the fungus seemed to be most appropriately classified in *Dothistroma,* it became necessary to use the new combination *Dothistroma septospora* (Dorog.) Morelet (79). Note here and in the *Lophodermium* example that the name of the author who most recently reclassified the fungus has been added to the name of the original author.

•No two genera of plants (including fungi under the code) may have the same name. In case of conflict, the older validly published name has priority, and the more recently named genus must be renamed. Similarly, no two species in the same genus may have the same name. If through ignorance a scientist gives to a newly described species a name previously used for another species in the same genus, the earlier name has priority, and the second species must be renamed. Also, if a species that was validly named within one genus is reclassified in a second genus where a different species already has the same final epithet, the reclassified species must be renamed. If the reclassified species has synonyms, the oldest one that will be legitimate in the new genus is the correct one. If the species has no available synonyms, a new name must be coined.

The fungus that causes a well known tip blight of pines and other conifers provides an example. A 1980 proposal (79) by Dr. Brian Sutton of the Commonwealth Mycological Bureau to transfer this fungus from the genus *Diplodia* to *Sphaeropsis* and to change its name from *Diplodia pinea* (Desm.) Kickx to *Sphaeropsis sapinea* (Fr.) Dykko & Sutton has been widely accepted. This reclassification was based on Sutton's judgment that the fungus conforms adequately to the description of the genus *Sphaeropsis.* The epithet *pinea* had to be abandoned because it had previously been applied to other fungi in *Sphaeropsis.* The oldest epithet that could legitimately be used was *sapinea.*

•The priority of old names extends back to specific starting dates between 1753 and 1821 when the first major taxonomic references for plants and fungi were published. A fungal name published earlier than the starting date for the major taxonomic group to which the fungus belongs has no standing unless validly republished on or after the starting date. When the name of a fungus known since before 1753-1821 and reclassified one or more times is written in its complete form, it has four main elements: the Latin binomial, followed in parentheses by the name of the person who described the species before the starting date and the name of the person who first validly published the Latin name (separated by "ex" or simply by a colon), and finally the name of the person who most recently reclassified the species. The name of the first authority is only enclosed within parentheses when a later author reclassifies a fungus. Thus, in our first example, the long-known needle cast fungus is *Lophodermium pinastri* (Schrad. ex Hook.) Chev.

Acceptance of Changed Names

It is one thing for a taxonomic researcher to reclassify a fungus or correct its name, but this change will not necessarily be adopted by other mycologists, by plant pathologists, or by lay people such as tree care specialists. Professor Richard Korf, a specialist in fungal systematics at Cornell University, makes clear to his students and colleagues that they are not obliged to accept every new name that mycologists propose for plant pathogens. You or I can reject a change or defer adopting it until we are convinced it is scientifically worthwhile or until people more knowledgeable than ourselves adopt it. But if we reject or defer the change, we should have defensible reasons for doing so. We should be able to say why we disagree with the person who proposed the change or why we will defer adoption.

I often hear or see colleagues reject name changes for inadequate reasons, usually that they simply prefer a familiar name and don't want to be bothered learning a new one, let alone learning the reason for the change. To such people and to my students I put the following argument. If you as a professional person have completed a piece of research or other work and published the results, you want your report to be noticed and its contents—your facts and ideas—to be carefully considered by readers. You hope your ideas will be accepted as valid, but the main matter is fair consideration. You should extend to the taxonomic work of biologists the same consideration that you desire for your own work.

Authors of scientific papers in plant pathology sometimes mention important synonyms for pathogen names. This practice promotes awareness of proposed changes in names, and it can help reduce the delay before a proposed change is generally adopted or rejected. If this practice were more common, nonspecialists would more readily notice and adopt new names of plant pathogens.

The table below shows name changes proposed or adopted for many tree pathogens. Not all of the proposals are recent, however, because plant pathologists have in many cases been slow to notice the contributions of taxonomic researchers. Because of limited space in the table, authorities for names are omitted. They are given in the references.

Table 1. Some name changes adopted or proposed for pathogens of trees and shrubs.

Tree and Disease	*Name of Pathogen*	*Former Names*	*Notes*
Angiosperms. Canker, dieback	*Botryosphaeria obtusa*	*Physalospora obtusa*	Reclassified (73).
	Botryosphaeria rhodina, conidial state *Lasiodiplodia theobromae*	*Physalospora rhodina*, conidial state *Botryodiplodia theobromae*, *Diplodia natalensis*	Reclassified (8, 79).
Angiosperms. Canker-rot	*Cerrena unicolor*	*Daedalea unicolor*	The genera of polypore fungi have been revised (33, 71).

Tree and Disease	Name of Pathogen	Former Names	Notes
	Inonotus glomeratus	*Polyporus glomeratus*	Reclassified (33, 71).
	Irpex lacteus	*Irpex tulipiferae, Polyporus tulipiferae*	Reclassified (33, 71).
	Trametes versicolor	*Coriolus versicolor*	Reclassified (33, 71).
Angiosperms. Leaf spot, leaf blight	*Cristulariella moricola*	*Cristulariella pyramidalis*	The older epithet moricola has priority (67). A sexual state, *Grovesinia pyramidalis,* has formed in culture but has not been detected in the field in North America (16).
Angiosperms. Mistletoe	*Phoradendron serotinum* in the East, *P. coryae, P. macrophyllum, P. tomentosum,* and *P. villosum* in the Southwest and West	*Phoradendron flavescens*	*P. flavescens* was a species complex (87).
Angiosperms. Powdery mildew	*Microsphaera* spp.	*Microsphaera penicillata,*	The older epithet *penicillata* has priority over *M. alni,* but *M. penicillata* has been divided into many host-specialized species. *M. penicillata* in the new narrow sense occurs only on alder (13).
	Phyllactinia guttata	*Phyllactinia corylea*	the older epithet *guttata* has priority (63).
Angiosperms. Root and butt rot	*Ganoderma applanatum*	*Fomes applanatus*	The genera of polypore fungi were revised (33, 71).
	Ganoderma lucidum	*Ganoderma curtisii, Polyporus curtisii, P. lucidus*	Reclassified. *G. curtisii* is now considered to be synonymous with G. lucidum (33).
	Hypoxylon deustum	*Ustulina deusta, U. vulgaris*	Some specialists prefer to classify this fungus in *Ustulina* (36). The older epithet *deusta,* or *deustum* if in *Hypoxylon,* has priority (52).
	Oxyporus latemarginatus	*Poria latemarginata, Poria ambigua*	The genera of polypore fungi were reclassified (33). The earlier epithet *latemarginatus* has priority (24).
Angiosperms. Trunk rot	*Phellinus gilvus*	*Polyporus gilvus*	The genera of polypore fungi have been revised (33, 71).
	Phellinus igniarius	*Fomes igniarius*	Reclassified (33, 71).
Angiosperms and gymnosperms. Canker and dieback	*Botryosphaeria dothidea*	*Botryosphaeria ribis*	*B. dothidea* and *B. ribis* are perhaps distinct species, but if not, the epithet *dothidea* has priority (8, 9). North American workers favor the one-species concept.
Angiosperms and gymnosperms. Root rot	*Armillaria* spp. such as *A. bulbosa, A. mellea,* and *A. obscura,* (syn. *A. ostoyae)*	*Armillaria mellea*	*A. mellea* in the old sense is a complex of species that are still being identified and named. They differ in host preferences, distribution, and virulence (1, 57, 60, 70, 85, 86).
	Armillaria tabescens	*Clitocybe tabescens*	Reclassified (86).
	Phymatotrichopsis omnivora	*Phymatotrichum omnivorum*	*Phymatotrichum* was synonymized with *Botrytis,* and a new genus, *Phymatotrichopsis,* was created for the distinctive southwestern pathogen (39).
	Scytinostroma galactina	*Corticium galactinum*	Reclassified (23).
Angiosperms and gymnosperms. Trunk rot	*Fomitopsis pinicola*	*Fomes pinicola*	The genera of polypore fungi have been revised (33, 71).
	Laetiporus sulfureus	*Polyporus sulfureus*	Reclassified (33, 71).
Angiosperms and gymnosperms. Trunk rot, silverleaf of fruit trees	*Chondrostereum purpurem*	*Stereum purpureum*	Reclassified (64).
Gymnosperms. Black stain root disease	*Leptographium wageneri* var. *wageneri*	*Verticicladiella wageneri* var. *wageneri*	*Verticicladiella* has been reduced to synonymy with *Leptographium* (89). *L. wageneri* var. *wageneri* does not have a known sexual state (35).

Tree and Disease	Name of Pathogen	Former Names	Notes
	Ophiostoma wageneri, conidial state *Leptographium wageneri* var. *ponderosa*	*Ceratocystis wageneri*, conidial state *Verticicladiella wageneri* var. *ponderosa*	Many species of *Ceratocystis* have been proposed for transfer to *Ophiostoma*, but mycologists are not agreed that this should be done (34, 83). *Verticicladiella* has been reduced to synonymy with *Leptographium* (89).
Gymnosperms. Canker	*Leucostoma kunzei*, conidial state *Leucocytospora kunzei*	*Valsa kunzei*, conidial state *Cytospora kunzei*	The genus *Valsa* was redefined, and several well known species were placed in *Leucostoma* (46). These changes have been widely adopted, but the proposed genus *Leucocytospora* for the conidial states of *Leucostoma* spp. has not found favor.
	Ascocalyx abietina	*Gremmeniella abietina*, *Scleroderris lagerbergii*	*S. lagerbergii* was reclassified in the new genus *Gremmeniella*, which subsequently was synonymized with *Ascocalyx*. The older epithet *abietina* has priority (59).
Gymnosperms. Dwarf mistletoe	*Arceuthobium spp.*, including *A. abietinum*, *A. apachecum*, *A. blumeri*, *A. californicum*, *A. campylopodum*, *A. cyanocarpum*, *A. divaricatum*, *A. laricis*, *A. microcarpum*, and *A. tsugense*	*Arceuthobium campylopodum*	*A. campylopodum* in the old broad sense was a complex of host-specialized forms. All have been raised to the species level (37).
Gymnosperms. Pine wood nematode	*Bursaphelenchus xylophilus*	*Bursaphelenchus lignicolus*	The older epithet *xylophilus* has priority (61).
Gymnosperms. Root rot	*Heterobasidion annosum*	*Fomes annosus*	The genera of polypore fungi have been revised (33, 71).
	Inonotus circinatus	*Polyporus circinatus*	Reclassified (33).
	Inonootus tomentosus	*P. tomentosus*	Reclassified (33).
	Phaeolus schweinitzii	*Polyporus schweinitzii*	Reclassified (33, 71).
	Phellinus weirii	*Poria weirii*	Reclassified (33).
Gymnosperms. Shoot blight, tip blight, tip dieback	*Sirococcus conigenus*	*Sirococcus strobilinus*, *Ascochyta piniperda*	Reclassified (79). The older epithet *conigenus* has priority (15).
	Sphaeropsis sapinea	*Diplodia pinea*, *Sphaeropsis ellisii*	Characteristics of *Sphaeropsis* were clarified, and the tip blight fungus was moved back to this genus, in which it had once previously been classified. The epithet *sapinea* is the oldest one available (79).
	Pestalotiopsis funerea	*Pestalotia funerea*	Nearly all species formerly in *Pestalotia* have been reclassified in *Pestalotiopsis* and other genera (79).
Gymnosperms. Snow twig canker	*Phacidium coniferarum*, conidial state *Apostrasseria pseudotsugae*	*Potebniamyces coniferarum*, conidial state *Phacidiopycnis pseudotsugae*, *Phomopsis pseudotsugae*	Reclassified (22).
Gymnosperms. Trunk rot	*Haematostereum sanguinolentum*	*Stereum sanguinolentum*	Reclassified (64), but some specialists retain this fungus in *Stereum* (29, 81).
	Cryptoporus volvatus	*Polyporus volvatus*	The genera of polypore fungi have been revised (33, 71).
	Gloeophyllum saepiaria	*Lenzites saepiaria*	Reclassified (33).
	Phellinus pini	*Fomes pini*	Reclassified (33, 71).
Ash. Anthracnose	*Discula* sp.	*Gloeosporium aridum*	Although the genus *Gloeosporium* is defunct, the ash pathogen has not been formally reclassified. It belongs in *Discula* (7).
Ash and other trees. Trunk rot	*Perenniporia fraxinophila*	*Fomes fraxinophilus*	The genera of polypore fungi have been revised (33, 71).

Tree and Disease	*Name of Pathogen*	*Former Names*	*Notes*
Aspen. Canker	*Leucostoma nivea* *Phibalis pruinosa*	*Valsa nivea* *Encoelia pruinosa, Cenangium singulare*	See note for gymnosperms, Cytospora canker. *C. singulare* was reclassified in *Phibalis*, where the older epithet *pruinosa* has priority (49, 82). *Encoelia* was proposed for conservation against the earlier genus *Phibalis* (28), but this change does not appear in the list of conserved genera (84).
Aspen. Leaf and shoot blight	*Venturia tremulae*, conidial state *Pollaccia radiosa*	*Venturia macularis*, conidial state *Pollaccia americana*	Three varieties of this fungus are recognized. The most common variety in North America is *V. tremulae* var. *grandidentatae* in its conidial state *P. radiosa* var. *lethifera. V. macularis* is a separate species the conidial state of which is unknown (56).
Aspen. Trunk rot	*Phellinus tremulae*	*Fomes igniarius* var. *populinus, F. igniarius f. tremulae*	The genera of polypore fungi have been revised, and this fungus has been raised to the the species level (33, 51, 71).
Azalea. Leaf and flower blight	*Exobasidium azaleae*	*Exobasidium vaccinii*	*E. azaleae* is one of several species in an *E. vaccinii* complex (72). Because more biological and taxonomic work is needed to delimit species characteristics in this group, many workers continue to use the name *E. vaccinii* in the broad sense.
Azalea. Powdery mildew	*Microsphaera azaleae*	*Microsphaera penicillata, M. alni*	Many species are now recognized in place of *Microsphaera penicillata (M. alni)*(13).
Birch. Anthracnose.	*Discula betulina*	*Gloeosporium betulinum*	All fungi in *Gloeosporium* were reclassified (7).
Birch. Canker-rot	*Inonotus obliquus*	*Poria obliqua*	The genera of polypore fungi have been revised (33, 71).
Camellia. Gray blight	*Pestalotiopsis maculans*	*Pestalotiopsis guepinii, Pestalotia guepinii*	Nearly all species formerly classified in *Pestalotia* have been reclassified in *Pestalotiopsis* and other genera. The older epithet *maculans* has priority (65).
Cherry. Bacterial canker	*Pseudomonas syringae* pv. *syringae*	*Pseudomonas syringae*	Many former species of *Pseudomonas* have been reduced to pathovars of *P. syringae* (27, 41, 76).
Cherry. Leaf curl and witches'-broom	*Taphrina wiesneri*	*Taphrina cerasi*	The older epithet *wiesneri* has priority (11).
Cherry. Leaf spot and shot hole	*Blumeriella jaapii*, condial state *Phloeosporella padi*	*Coccomyces hiemalis, Higginsia hiemalis*, conidial state *Cylindrosporium padi*	A new genus name and a return to the earlier specific epithet were necessary when *C. hiemalis* was found to be identical with *Pseudopeziza jaapii*, the type species of the invalid genus *Higginsia. B. jaapii* includes the former *C. hiemalis, C. lutescens*, and *C. prunophorae.* The conidial states were reclassified (6).
Cherry and hawthorn. Powdery mildew	*Podosphaera clandestina*	*Podosphaera oxycanthae*	The older epithet *clandestina* has priority (47, 63).
Cherry and peach. Valsa canker	*Leucostoma cincta* and *L. persoonii*	*Valsa cincta* and *V. leucostoma*	See note for gymnosperms, Cytospora canker.
Chestnut. Blight, canker	*Cryphonectria parasitica*	*Endothia parasitica*	Reclassified, but some specialists prefer to retain this fungus in *Endothia* (10, 69).
Cypress. Canker	*Seiridium cardinale*	*Coryneum cardinale*	Reclassified (80).
Elm. Black spot	*Stegophora ulmea*	*Gnomonia ulmea*	Taxonomic studies in the Gnomoniaceae resulted in a narrower concept of *Gnomonia.* The elm pathogen didn't fit and was transferred (10).
Elm. Dutch elm disease	*Ophiostoma ulmi*, conidial states *Pesotum ulmi* and *Sporothrix* sp.	*Ceratocystis ulmi*, conidial state *Graphium ulmi*	Mycologists are divided as to whether or not *Ophiostoma* should be cleaved from *Ceratocystis* (34, 83). The asexual states of *O. ulmi* have been reclassified (17, 19).

Tree and Disease	Name of Pathogen	Former Names	Notes
Fir. Snow blight, twig canker	*Nothophacidium abietinellum*	*Phacidium abietinellum*	Reclassified (68).
	Phacidium balsamicola, conidial state *Apostrasseria balsamicola*	*Potebniamyces balsamicola*, conidial state *Phacidiopycnis balsamicola*	Reclassified (22).
Fir. Tip blight	*Delphinella balsameae*	*Rehmiellopsis balsameae*	Reclassified (58).
Firethorn. Scab	*Spilocaea pyracanthae*	*Fusicladium pyracanthae*	Reclassified (5).
Fuchsia. Rust	*Pucciniastrum pustulatum*	*Pucciniastrum epilobii f.* sp. *palustris, P. fuchsiae*	Authorities are divided as to whether or not *P. pustulatum* is a species distinct from *P. epilobii.* Both names have priority over *P. fuchsiae* (32, 88, 91).
Hackberry and sugarberry. Powdery mildew	*Pleochaeta polychaeta*	*Uncinula polychaeta*	Reclassified (48).
Holly, Japanese. Root rot	*Chalara elgans*	*Thielaviopsis basicola*	Reclassified (66).
Honeysuckle. Leaf blight	*Insolibasidium deformans*, conidial state *Glomopsis lonicerae*	*Herpobasidium deformans*, conidial state *Glomerularia lonicerae*	Reclassified (38, 62).
*Hornbeam and hop-*hornbeam. Anthracnose	*Gnomoniella carpinea*, conidial state *Monostichella robergei*	*Sphaerognomonia carpinea* conidial state *Gloeosporium robergei*	The Gnomoniaceae has been revised (10, 55). Fungi formerly in *Gloeosporium* were all Reclassified (7).
Horse-chestnut and buckeye. Leaf blotch	*Botryosphaeria aesculi*	*Guignardia aesculi*	Reclassified (9).
Larch. Canker	*Lachnellula willkommii*	*Trichoscyphella willkomii Dasyscypha willkommii*	Reclassified (20).
Lilac. Bacterial blight and dieback	*Pseudomonas syringae* pv. *syringae*	*Pseudomonas syringae*	See note for cherry, bacterial canker.
Lilac. Powdery mildew	*Microsphaera syringae*	*Microsphaera penicillata, M. alni*	Many species are now recognized in place of *Microsphaera penicillata (M. alni)*(13).
Locust black. Trunk rot.	*Phellinus robiniae*	*Fomes rimosus*	The genera of polypore fungi have been revised. (33). The epithet *rimosus* properly belongs to a different fungus (25).
Maple. Anthracnose	*Kabatiella apocrypta or Aureobasidium apocryptum*	*Gloeosporium apocryptum*	Fungi formerly in *Gloeosporium* were all reclassified (7). Whereas the maple pathogen on its natural substrate has features not described for *Aureobasidium,* acceptance of the combination *A. apocryptum* (40) may be premature.
Maple. Canker and dieback	*Valsa ambiens* subsp. *leucostomoides*	*Valsa leucostomoides*	*V. leucostomoides,* although merged with *V. ambiens,* is maintained as a subspecies (77).
Maple and other trees. Trunk rot	*Oxyporus populinus*	*Fomes connatus*	The genera of polypore fungi have been revised. (33). The older epithet *populinus* has priority (25).
	Climacodon septentrionalis	*Hydnum septentrionale, Steccherinum septentrionale*	The century-old concept of Climacodon as distinct from *Hydnum* (45) has been accepted by contemporary mycologists (51).
Oak. Anthracnose	*Apiognomonia quercina*, conidial state *Discula quercina*	*Gnomonia quercina*, conidial state *Gloeosporium quercinum*	The Gnomoniaceae has been revised (10, 55). All fungi formerly in *Gloeosporium* have been reclassified (7).
Oak. Canker	*Urnula craterium*, conidial state *Conoplea globosa*	Conidial state formerly known as *Strumella coryneoidea*	The sexual *(Urnula)* state of this pathogen was discovered many years after the disease was described (42). The asexual state was reclassified in *Conoplea* where the older epithet *globosa* has priority (43).
Oak. Canker-rot	*Inonotus andersonii*	*Poria andersonii*	The genera of polypore fungi have been revised (33).

Tree and Disease	Name of Pathogen	Former Names	Notes
	Inonotus hispidus	*Polyporus hispidus*	Reclassified (33).
Oak. Dieback, twig canker	*Botryosphaeria quercuum*	*Physalospora glandicola*	Reclassified (8).
Oak. Leaf spot	*Tubakia dryina*	*Actinopelte dryina*	Renamed because the name *Actinopelte* is valid only for a genus of lichens (78).
Oak. Powdery mildew	*Brasiliomyces trina*	*Erysiphe trina*	Reclassified as part of a revision of the genera of powdery mildew fungi (90).
Oak. Root rot	*Inonotus dryadeus*	*Polyporus dryadeus*	The genera of polypore fungi have been revised (33).
Oak. Trunk rot	*Globifomes graveolens*	*Polyporus graveolens*	The genera of polypore fungi have been revised (33).
	Hericium erinaceus	*Hydnum erinaceus*	Reclassified (53).
	Inonotus dryophilus	*Polyporus dryophilus*	Reclassified (33).
	Phellinus everhartii	*Fomes everhartii*	Reclassified (33).
Oak and hickory. Canker-rot	*Phellinus spiculosus*	*Poria spiculosa*	Reclassified (33).
Oleander and olive Oleander gall and olive knot	*Pseudomonas syringae pv. savastanoi*	*Pseudomonas savastanoi*	See note for cherry, bacterial canker.
Persimmon. Wilt	*Acremonium diospyri*	*Cephalosporium diospyri*	Reclassified (31).
Pine. Fusiform rust	*Cronartium quercuum f. sp. fusiforme*	*Cronartium fusiforme*	The fusiform rust fungus in its telial state on oak is indistinguishable from the pine-oak gall rust fungus and was therefore reclassified as a *forma specialis* of the latter (14).
Pine. Needle blight	*Mycosphaerella dearnessii*	*Scirrhia acicola*	Reclassified (9, 30). In the North, only the conidial state, *Lecanosticta acicola,* is found.
	Mycosphaerella pini, conidial state *Dothistroma septospora*	*Scirrhia pini,* conidial state *Dothistroma pini*	Reclassified (30). In central and eastern North America, we find only the conidial state, for which the epithet *septospora* has priority (79).
Pine. Needle cast	*Cyclaneusma minus*	*Naemacyclus niveus*	Two species were discovered where only one had been recognized. The long-known *N. niveus,* now *C. niveum,* is a saprophyte. The second species, named *N. minor* and then *C. minus,* causes needle cast (21).
	Davisomycella ampla	*Hypodermella ampla*	Reclassified (18)
	Lophodermella concolor	*Hypodermella concolor*	Reclassified (18).
	Lophodermella montivaga	*Hypodermella montivaga*	Reclassified (18).
	Lophodermium seditiosum	*Lophodermium pinastri*	The new species *L. seditiosum* was found to cause the needle cast previously attributed to *L. pinastri.* The latter is a saprophyte or weak pathogen of old needles (54).
Pine. Pitch canker	*Fusarium moniliforme* var. *subglutinans*	*Fusarium lateritium*	The pathogen was initially misidentified (50).
Pine. Procerum root disease	*Leptographium procerum*	*Verticicladiella procera*	*Verticicladiella* was reduced to synonymy with *Leptographium* (89).
Plane tree and sycamore. Anthracnose	*Apiognomonia veneta,* conidial state *Discula platani*	*Gnomonia platani,* conidial state *Gloeosporium platani*	The Gnomoniaceae has been revised (10, 54). All fungi formerly classified in *Gloeosporium* have been reclassified (7).
Plane tree and sycamore. Powdery mildew	*Microsphaera platani*	*Microsphaera penicillata, M. alni*	Many species are now recognized in place of *Microsphaera penicillata (M. alni)*(13).
Plum and chokecherry. Black knot	*Apiosporina morbosa*	*Dibotryon morbosum*	Reclassified (3).
Poplar. Canker and dieback	*Discosporium populeum*	*Chondroplea populea, Dothichiza populea*	Renamed because this pathogen is the type of the older genus *Discosporium* (79). *D. populeum* is the conidial state of *Cryptodiaporthe populea.*

Tree and Disease	Name of Pathogen	Former Names	Notes
Rosaceae. Leaf spot	*Diplocarpon mespili*, conidial state *Entomosporium mespili*.	*Diplocarpon maculatum Fabraea maculata*, conidial state *Entomosporium maculatum*	Reclassified (44). The older epithet *mespili* has priority for the conidial and ascigerous states (75, 79).
Russian olive. Canker	*Phomopsis arnoldiae*	*Phomopsis elaeagni, Fusicoccum elaeagni*	The name *P. elaeagni* was already in use for a different fungus when the canker pathogen was transferred from *Fusicoccum* into *Phomopsis* (2, 79).
Walnut. Bacterial blight	*Xanthomonas campestris pv. juglandis*	*Xanthomonas juglandis*	Many former species of *Xanthomonas* have been reduced to pathovars of *X. campestris* (27, 41, 76).
Willow. Canker, dieback	*Glomerella miyabeana*, conidial state *Colletotrichum*	*Physalospora miyabeana*, conidial state *Gloeosporium*	Reclassified (4). This fungus is said to be indistinguishable from the generalized anthracnose pathogen, *Glomerella cingulata* (8).
	Diplodina microsperma	*Diplodina salicis, Discella carbonacea, Discella salicis*	Reclassified. The older epithet *microsperma* has priority (79). This is the conidial state of *Cryptodiaporthe salicella*.
Willow. Powdery mildew	*Uncinula adunca*	*Uncinula salicis*	*U. salicis* is considered to be a variant of the widely distributed species *U. adunca* (13).

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Abstract

ABBOTT, RICHARD E. 1987. **Company fills need for trained arborists.** Arbor Age 7(4): 18-20.

Due to the highly competitive, low-bidder environment in which our industry does business, on-the-job training is costly and almost impractical. Many times, employers point out that it is also too risky to invest in a new employee who may or may not prove to be a responsible, dependable worker. We cannot afford and do not need two-or four-year college-trained tree climbers. We don't need more college students. More colleges teaching arboriculture will not solve the urgent need for trained climbers. ACRT, Inc., Environmental Specialists, headquartered in Kent, OH, is an employee-owned small business that provides green-industry training nationally. Entry-level, upgrade and supervisory training programs are conducted in tree care, line clearing, landscape and pesticides.