

## The Literature on Plant Pathology

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Literature sources on plant pathology have been listed for the guidance of investigators, particularly chemists, interested in this field. These sources include textbooks and reference books, technical journals, state and federal government publications, and trade journals. Both abstract and original article sources have been covered. Foreign, as well as United States publications, have been cited.

COMPARED WITH CHEMISTRY, plant pathology or phytopathology is a small and young science. Its modern period began about 1910, but since that time its literature has become rather widely scattered in a variety of technical journals. The literature prior to 1910 has historical but relatively little technical interest.

The chemist, delving into the phytopathological literature, will be somewhat disappointed by its chemical inadequacy, with the notable exception of the works of certain recent contributors. The modern phytopathologist must have a strong basis in chemistry, but this has only recently been recognized. The phytopathologist has regarded himself primarily as a biologist, and his training, interest, and publications all have stressed the biological rather than the chemical aspects of his work.

### Periodicals

The more important phytopathological literature is to be found in the technical journals and state and federal government publications, and, quite recently, in the trade journals. Phytopathologists have been very conservative in writing for the lay public. The foremost of the American periodicals in this field is the journal *Phytopathology*, now in its forty-sixth year. The annual volumes are well indexed; a 30-year index was issued in 1940 and a 10-year index in 1950. An important counter-

part in Germany is the *Phytopathologische Zeitschrift*, while in England the principal journal is the *Annals of Applied Biology*. The former Series C of the *Canadian Journal of Research*, which is now the *Canadian Journal of Botany*, has contained important phytopathological contributions, and in France the leading publication in this field is *Progrès Agricole et Viticole*.

A second class of periodical that frequently contains articles of phytopathological interest is the botanical journals, of which the principal ones in the United States are the *American Journal of Botany* and *Botanical Gazette*. Much significant work in this field has been done at the Boyce Thompson Institute and the *Contributions* of this institute represent another good source.

Plant pathologists are beginning to make greater use of the chemical journals for their publications, and recent issues of the JOURNAL OF AGRICULTURAL AND FOOD CHEMISTRY and *Industrial and Engineering Chemistry* contain some papers of interest in this field. There are numerous interrelationships between plant pathology and entomology, and accordingly, papers of interest in plant pathology will occasionally be found in the *Journal of Economic Entomology*.

Among the government publications, the *Journal of Agricultural Research* was the outstanding medium for plant pathological contributions from government workers, until it became defunct a few

years ago. At present, contributions from the Federal Department of Agriculture are largely in the series of technical bulletins and other serials of the department, while those of workers in the state agricultural experiment stations find their primary outlet in the various types of bulletins and circulars issued by each station. Especially rich in valuable phytopathological material are the technical bulletins from the agricultural experiment stations of Cornell University, Connecticut College of Agriculture, Purdue University, and the state colleges or universities of Delaware, California, Pennsylvania, Wisconsin, Minnesota, Iowa, Louisiana, Ohio, and North Carolina. State and federal government workers are also frequent contributors to the technical periodicals mentioned above.

The only United States Government publication dealing specifically with plant pathology is the *Plant Disease Reporter* issued by the Plant Disease Epidemics and Identification Section of the Agricultural Research Service. This is very timely, and, although the articles are often of a preliminary nature, it is particularly useful for the summaries of fungicide trials carried out annually throughout the United States.

For the world as a whole, there is the relatively new *Plant Protection Bulletin*, "a publication of the World Reporting Service on Plant Diseases and Pests," issued by FAO in Rome.

The principal trade journals, which contain both technical reports and much industry and personality news are *Agricultural Chemicals*, *Farm Chemicals*, and *CropLife*, the last being of newspaper type. Considerable news of the fungicide industry is also carried in the *JOURNAL OF AGRICULTURAL AND FOOD CHEMISTRY*.

A number of abstracting journals are helpful in getting at the literature in plant pathology. Among these, the *Review of Applied Mycology* is world-wide in its scope, very up to date, and very complete, especially in regard to British Empire reports. The *Experiment Station Record* was formerly an excellent source of otherwise inaccessible information on United States Government publications, but this was discontinued a few years ago as an economy measure. *Biological Abstracts* is thorough for the biological aspects of plant pathology work, but not strictly up to date. Chemical aspects of this work are faithfully and rather completely reported in *Chemical Abstracts*. Good coverage of foreign literature is given in the abstract section of *Botanisches Zentralblatt*.

For classified lists of titles of papers in plant pathology, rather complete listings are given in the *Agricultural Index*, published by the U. S. Department of Agriculture, which also publishes currently its *List of Available Publications*.

From time to time, interesting and important work in plant pathology is reported from Russia. For example, much of the early work on antibiotics for the control of plant diseases was done in Russia. The Russian journals containing such papers are usually available in the United States, and a comprehensive and up-to-date list of publications in this and other scientific fields is given in the *Monthly List of Russian Accessions*. A comparable listing for the satellite countries is in the *East European Accessions List*. Both of these are published by the Library of Congress and come out monthly.

The Chemical-Biological Coordination Center of the National Research Council has a broad program on the biological evaluation of many new compounds. Results of these tests, for activity against plant-disease organisms as against other pests, are periodically reported in the *Summary Tables of Biological Tests*, published by this center in Washington.

Some of the private industrial research institutes, of which Battelle Memorial Institute is one, maintain their private files of information relating chemical structure to biological activity, and the industries that furnish pesticidal chemicals frequently are willing to release information that is helpful in attempting to cover the plant-pathological literature.

In using indexes to comb through the

technical literature in this field, both chemical and biological approaches are required, using such key topics as: Latin and English names of host plants, Latin names of causative organisms, fungicides, chemical structure, plant disease, phytotoxicity, wood preservation, and spraying and dusting. In the patent literature, fungicidal properties of compounds may be mentioned only incidentally. In searching for information on specific fungicides, the compilation of "Chemical Names for Active Ingredients of Fungicides" (12) may be of particular help.

For completeness in coverage of the plant-pathology literature, a number of libraries in the United States are outstanding. Among them should be mentioned the library of the U. S. Department of Agriculture and the Library of Congress in Washington, those of Cornell University in Ithaca, N. Y., the University of Wisconsin at Madison, University of California at Berkeley, Iowa State College at Ames, Boyce Thompson Institute at Yonkers, N. Y., and the Shaw Garden in St. Louis, Mo. (Missouri Botanical Garden).

It is impossible for textbooks to be fully up to date on the chemical aspects of plant-disease control, and some of them do not attempt to stress this. They are very helpful, however, in understanding the principles of plant disease. Among the more recent and more useful are Walker's "Plant Pathology" (17), Chester's "Nature and Prevention of Plant Diseases" (4), Sorauer's compendious "Handbuch der Pflanzenkrankheiten" (14), and Butler and Jones' "Plant Pathology" (3).

#### Reference Books

In addition, there are several fine reference books covering specific sections of plant pathology, such as Walker's "Diseases of Vegetable Crops" (16), Dickson's "Diseases of Field Crops" (5), Gram and Weber's "Plant Diseases in Orchard, Nursery, and Garden Crops" (10), and Baxter's "Pathology in Forest Practice" (2). This, however, does not begin to exhaust the list of excellent books written to cover all or distinct phases of phytopathology. This list should not be concluded without mentioning the 1953 Yearbook of Agriculture entitled "Plant Diseases" (15), containing contributions on many aspects of modern plant pathology by a large number of authors.

Reference books that stress the chemical aspects of plant-disease control are Frear's "Catalog of Insecticides and Fungicides," "Chemical Fungicides and Plant Insecticides" (7), "Agricultural Chemistry. A Reference Text" (6), "Chemistry of Insecticides, Fungicides, and Herbicides" (8), and "Pesticide Handbook" (9); Horsfall's "Fungicides

and Their Action" (11); Martin and Miles' "Guide to the Chemicals Used in Crop Protection" (13); and "Agricultural Control Chemicals" (7).

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