Plant, Soil and Microbial Sciences

PLANT PATHOLOGY

General Resources in Plant Pathology

The Plant Pathology Internet Guide Book, Thorsten Kraska, University of Bonn, Germany. A comprehensive Internet resource guide for plant pathology, applied entomology, and all related fields. A menu links to specific areas and topics, plus journals, books and publications, teaching, and software.

PlantFacts. Ohio State University’s Department of Horticulture and Crop Science runs this international knowledge bank and multimedia learning center about plants. Has searchable databases providing access to material
http://plantfacts.osu.edu/ [2]

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Teaching Plant Pathology

The Education Center of the American Phytopathological Society. Teaching resources for introductory and advanced plant pathology college courses. Lab exercises, case studies, simulations, lessons, articles on plant pathology topics, and much more. A large and well-organized site with useful and interesting information for plant pathology educators.
http://www.apsnet.org/edcenter/Pages/default.aspx [3]

Plant Pathology Internet Guide Book (PPIGB)—Teaching, Education. Well-annotated links to numerous resources for teaching plant pathology and related areas. Scroll down on the left to "Teaching, Courses, Education." Links include syllabi, lessons, videos, and other useful course materials. Comments in red indicate websites of special value to those teaching plant pathology.

Plants, Pathogens and People: Promoting Agricultural Awareness, University of Illinois with support from the American Phytopathological Society Foundation and the National Science Foundation. A virtual classroom based on five areas: crown gall, Dutch elm disease, late blight of potatoes, soybean cyst, and the plant disease triangle. Includes information, resources, lab activities, and a chance to dialogue with others using this site.
Journal of Natural Resources and Life Sciences Education (American Society of Agronomy in cooperation with other societies in related areas).
A peer reviewed journal for teaching ideas K-16 in the life sciences, natural resources, and agriculture. Has searchable database with phytopathology and plant science categories. Includes courses, exercises, web lessons, learning activities, scholarship of teaching and learning research, and issues in teaching. Online version continuously updated during the year; one hard copy version published in December. Current issue available to paid subscribers only; full text of archived issues, 1998-2005, available free online.

The National Science Digital Library (NSDL).
A pathway to online resources in plant pathology teaching and research. Type “teaching plant pathology” into the search engine for courses and materials.

Teaching Resources in Botany and Plant Pathology, Purdue University.
Although geared primarily for K through 12 teachers, some lessons may be applicable, and the botanical and weed science slide sets may be useful in college courses.

Detailed notes on using this case study for problem-based learning in an introductory lab for a basic Plant Pathology course where students have access to microscopes and space to work in groups of two or three people. The case introduces concepts and ideas that will be pursued further during the semester.

Vegetable MD Online, Cornell University Plant Pathology Department.
A plant pathology vegetable disease web page with fact sheets on diseases by crops, a photo gallery, news articles/disease alerts, a glossary, and commercial vegetable guidelines. Also has pest and disease guides in Spanish.
http://vegetablemdonline.ppath.cornell.edu/ [9]

Web-based teaching modules for plant pathology applications in the R programming environment, A. H. Sparks, P.D. Esker, and K.A. Garrett, Kansas State University.
Contains examples of web-based modular coursework plus an introductory module for anyone unfamiliar with the R programming environment, a free software environment that includes graphics, math, and statistics.

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CROP AND SOIL SCIENCES

Societies for Crop and Soil Sciences

American Society of Agronomy.
Focus is on agronomic, crop, and soil sciences. Offers journals in several areas, publications, meetings, and other professional resources. Has searchable database for information useful for teaching.
Soil Science Society of America.
Materials under “Education” are mainly for K-12, but may be useful in early undergraduate courses as well. [12]

Sustainable Agriculture Research and Education (SARE).
SARE promotes farming systems that are “profitable, environmentally sound and good for communities.” This site offers links to sustainable agriculture grants, publications for educators, and curriculum guides. [13]

Teaching Resources in Crop and Soil Sciences

Dirtland, Michigan State University ‘s Digital Learning Center for Microbial Ecology.
A microbe zoo with teaching and learning materials about microbes in soil, animals (including humans), food production, the biosphere, and water. Informative, entertaining, and valuable for classroom teaching and for students’ independent learning. [14]

PlantFacts, Ohio State University.
Database and search engine for plant-related information and research and teaching information from universities and government institutions across the U.S. and Canada. [15]

The Twelve Soil Orders: Soil Taxonomy (University of Idaho).
Information on each of the 12 soil orders plus U.S. and global distribution maps. Also links to the downloadable PDF files of Soil Taxonomy, A Basic System of Soil Classification for Making and Interpreting Soil Surveys, 2nd edition, U.S. Dept. of Agriculture. [16]

Agripedia (University of Kentucky, College of Agriculture).
A comprehensive multimedia instructional resource for all areas within the study of agriculture and natural resources, including crop and soil sciences. Has searchable database for courses, course materials, a glossary, and relevant resources. Unfortunately, there are dead links, but the site still has much to offer educators who are willing to browse through the numerous links provided. [17]

Natural Resources Conservation Service Soils Website.
Developed and maintained by NRCS, this site has an educational component with resources for teachers and students such as soil profiles, urban soil issues, thematic and world soil maps, a photo gallery, and more. [18]

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Sample Courses and Course Materials

“Games in an Introductory Soil Science Course: A Novel Approach for Increasing Student Involvement with Course Material,” Elizabeth Sulzman. Journal of Natural Resources and Life Sciences Education 33:98-101 (2004). Describes several competitive games developed as a supplement to a traditionally taught lecture plus lab course in soil science. Students who took the optional one-credit supplement reported higher levels of enthusiasm for the course and scored significantly higher on the final exam.

Demonstrations in Soil Science.
Course outline and links to relevant sites are at http://www.agry.purdue.edu/courses/agry255/agry255.htm [20]
A PDF brochure of 17 demonstrations in soil science prepared by teachers in the Agronomy Department at Purdue can be downloaded at http://www.agry.purdue.edu/courses/agry255/brochure/brochure.html [21]

Journals on Teaching Crop and Soil Sciences

Journal of Natural Resources and Life Sciences Education (American Society of Agronomy).
A peer reviewed journal for teaching ideas K-16 in the life sciences, natural resources, and agriculture. Includes course descriptions, articles on use of online materials, exercises, web lessons, learning activities, SoTL research, and issues in teaching. Online version continuously updated during the year; one hard copy version published in December. Current issue available to paid subscribers only; full text of archived issues, 1998-2005, available free online.

Journal of Agricultural Education and Extension.
A peer-reviewed journal focusing on multi-disciplinary issues in agricultural education and extension. Print and online subscriptions available.
http://www.tandfonline.com/toc/raee20/current?cookieSet=1 [22]

Journal of International Agricultural and Extension Education (Association for International Agricultural and Extension Education).
A peer-reviewed journal focusing on agricultural and extension education in developing countries. Print and online subscriptions available.
http://www.tandfonline.com/toc/raee20/current?cookieSet=1 [22]

Journal of Agricultural Education Online (American Association for Agricultural Education).
Focuses on all aspects of teaching agriculture in higher education. This website contains links to past issues for searching and printing.
http://www.jae-online.org/ [23]

NACTA Journal (North American Colleges and Teachers of Agriculture).
Focuses on college teaching in agricultural, environmental, and natural and life sciences. The entire journal is not available online, but this site contains publication information and links to abstracts from recent issues, book reviews, and teaching tips.
These resources were compiled and annotated by Lois Rosen, Ph.D., Instructional Consultant for the Office of Faculty and Organizational Development, Michigan State University.