



This is the ninth fact sheet in a series of nine designed to provide an overview of key concepts in plant pathology. Plant pathology is the study of plant disease including the reasons why plants get sick and how to control or manage healthy plants.

Parasitic Higher Plants

Sarah D. Ellis, Michael J. Boehm, and Landon H. Rhodes
Department of Plant Pathology

Overview

Some higher plant forms live on the surface of or parasitize other plants and often cause harmful reactions in their hosts. These plants can be placed in three groups: the epiphytes, the hemiparasites, and the true parasites.

Epiphytes

Epiphytes do little or no harm to their host plants, using them merely for physical support and protection. Examples are Spanish moss and epiphytic orchids, which in their native habitats commonly grow on tree limbs.

Hemiparasites

Hemiparasites, sometimes called water parasites, do injure their host plants, absorbing water and mineral nutrients from them. However, they possess chlorophyll and can manufacture their own carbohydrates by photosynthesis.

Witchweed (*Striga asiatica*) is a hemiparasitic seed plant that severely damages sugarcane, corn, sorghum, many other grasses, and some broad-leaved plants. It attaches itself to the host's roots and utilizes most of the host's water and mineral nutrients, causing it to wilt, yellow, grow poorly, and die. The best control is to plant a crop, such as Sudan grass, that stimulates the witchweed seed to germinate, then plow under the entire field. Crops should be rotated and susceptible crops should not be planted.

Mistletoe (*Phoradendron* spp.), another member of the hemiparasitic group, attacks many broad-leaved trees such as ash, silver maple, honeylocust, hackberry, cottonwood, walnut, oak, birch, sycamore, and some conifers. The seeds germinate on limbs of susceptible hosts, forming an attach-

ment disk on the bark. The sticky berries are disseminated throughout the tree and from tree to tree by birds and wind. The usual control, although not very effective, is to cut out the mistletoe branches deep into the tree proximal



Leafy mistletoe on an oak tree. (Photo courtesy F. H. Tainter, copyright the American Phytopathological Society)

to the point of attachment. No good herbicidal control has been developed, although a dormant-season application of ethephon, an ethylene-releasing material, is a possible control on some plants. The best control is to plant only tree species resistant to mistletoe attacks.

True Parasites

True parasites lack chlorophyll and depend upon their hosts for all nourishment—carbohydrates, minerals, and water. Examples of this group are the dwarf mistletoe (*Arceuthobium* spp.) and dodder (*Cuscuta* spp.). Broomrape (*Orobancha* spp.) is a serious parasitic pest in Europe, Asia, and Africa and has caused extensive damage to tomatoes in California.

Dwarf mistletoe attacks many coniferous species in the western United States, reducing tree vigor and lowering

lumber quality. The sticky seeds (not the fruits) are forcibly ejected and can travel up to about 19 meters (60 feet). This is the principal means of dissemination. Birds are known to carry the sticky seeds on their feathers, but wind plays a very minimal role in dissemination. The best control is removal of infected trees.

Dodder has many species, but about six cause the major damage, attacking such crops as alfalfa, lespedeza, clover, flax, sugar beets, potatoes, and some vegetable crops as well as ornamentals. Dodder seriously reduces yields and quality of crops. Strict regulations prohibit the sale of crop seed contaminated by dodder seed. Great effort should be taken to avoid planting seed that has dodder seed mixed with it. Patches of dodder in field crops or along fences or ditch banks should be eradicated by burning or by herbicides.

Links

Dwarf Mistletoe: <http://www.apsnet.org/education/LessonsPlantPath/DwarfMistletoe/default.htm>

For detailed information on each of the IPM strategies, see the fourth fact sheet in this series, “Keeping Plants Healthy: An Overview of Integrated Plant Health Management” (PP401.04).

Introduction to Plant Disease Series

PP401.01: Plants Get Sick Too! An Introduction to Plant Diseases

PP401.02: Diagnosing Sick Plants

PP401.03: 20 Questions on Plant Diagnosis

PP401.04: Keeping Plants Healthy: An Overview of Integrated Plant Health Management

PP401.05: Viral Diseases of Plants

PP401.06: Bacterial Diseases of Plants

PP401.07: Fungal and Fungal-like Diseases of Plants

PP401.08: Nematode Diseases of Plants

PP401.09: Parasitic Higher Plants

These fact sheets can be found at OSU Extension’s “Ohioline” web site: <http://ohioline.osu.edu>. Search for “Plant Disease Series” to find these and other plant pathology fact sheets.

EMPOWERMENT THROUGH EDUCATION

Visit Ohio State University Extension’s web site “Ohioline” at: <http://ohioline.osu.edu>

Ohio State University Extension embraces human diversity and is committed to ensuring that all research and related educational programs are available to clientele on a nondiscriminatory basis without regard to race, color, religion, sex, age, national origin, sexual orientation, gender identity or expression, disability, or veteran status. This statement is in accordance with United States Civil Rights Laws and the USDA.

Keith L. Smith, Ph.D., Associate Vice President for Agricultural Administration and Director, Ohio State University Extension

TDD No. 800-589-8292 (Ohio only) or 614-292-1868