GLOSSARY

abscission — the detachment of structures, such as spores, leaves, and leaflets.
acervulus (*pl.* acervuli) — an asexual fruiting body (1–2 mm) of some fungi, which is saucer-shaped and initially produced in host tissue; conidia are produced on acervuli and bristle-shaped setae may be present, e.g. *Colletotrichum* spp.
adventitious root — a root that arises from another structure, such as a stem.
aeciospore — a microscopic fungal spore produced in an aecium; in wheat stem rust, aeciospores are produced on the alternate host in spring.
aecium (*pl.* aecia) — a cup-like fruiting structure (1–2 mm) of some rust fungi formed after fertilization between pycniospores or by hyphal fusion; produces aeciospores.
air-borne — movement of inoculum such as spores through the air, usually by wind, rain splash, or insects and other vectors.
alkaloid — a secondary metabolite which contains nitrogen and is basic (alkaline); some fungal alkaloids are highly toxic.
alternate host — a plant species other than the main crop host required by some rust fungi to complete their sexual life cycle; compare **alternative host**.
alternative host — a plant species that may serve as a host for a pathogen, but which is not required for the life cycle to be completed; compare **alternate host.**
anastomosis group (AG) — a group of similar isolates of a fungal species (especially *Rhizoctonia solani*) in which the hyphae of all isolates can fuse with each other, but not with isolates of other AGs; AGs may be specialized to attack certain host species.
anther — a male structure of a flower that contains pollen.
anthesis — the maturation of a flower to the point at which pollen is shed and fertilization can take place; in wheat, usually the time when anthers are just visible outside the florets.
anti-oxidant chemical — a compound capable of counteracting the damaging effects on living cells (especially cell membranes) of strong oxidizing agents, such as ozone and peroxyacetyl nitrate.
aphid — a small insect belonging to a group that feeds by sucking plant sap; may transmit diseases.
apothecium (*pl.* apothecia) — an open, cup-shaped, sexual fruiting body of some ascomycete fungi; produces asci with ascospores on the open surface; with or without a stalk.
ascocarp — a sexual fruiting body of fungi that produce ascospores.
ascospore — a microscopic fungal sexual spore produced in a sac-like ascus.
ascus (*pl.* asci) — in certain fungi, microscopic sac-like cell in which ascospores are produced after sexual fusion.
asexual state — nonsexual stage of a life cycle, producing spores without fertilization.
avirulent — being nonpathogenic, usually with respect to a particular cultivar of host plant.
awn — bristle-like extension of the outer bract of a floret of barley and other cereals.
axil — the angle formed between a petiole (leaf stalk) or branch and a stem.

bacterium (*pl.* bacteria) — a microscopic, one-celled organism lacking a nucleus or organelles; some bacteria cause plant diseases.
basidiospore — a microscopic haploid sexual spore produced on a basidium by certain fungi; in rust fungi, basidiospores are called sporidia and may infect an alternate host.
basidium (*pl.* basidia) — microscopic structure (sometimes a single cell) on which basidiospores are produced; in rust and smut fungi, basidia are produced by germinating teliospores.
biennial — a plant that has a 2-year life span and does not flower until the second year.
biofungicide — a biocontrol agent for fungal pathogens that works through massive inundation of the target pathogen to reduce its population or inhibit its growth.
blast — partial sterility in the inflorescences (flowering shoots) of cereals.
blight — a disease or symptom characterized by rapid and extensive necrosis (death) of above-ground plant parts.
blotch — a symptom where large irregular spots develop on foliage.
boll — the fruit and seed capsule of some plants, e.g., flax.
boot — the sheath of the uppermost leaf, initially enclosing the flowering shoots of cereal plants.
bract — a leaf in whose axil a flower or floret arises; in cereal plants, two important bracts are the palea and lemma, which enclose individual florets and eventually become part of the chaff.

brush end — the end of a wheat kernel which bears a brush of persistent hairlike epidermal cells; opposite the embryo end.
bunt ball — the mass of spores that replaces a kernel; see bunts of wheat.

canker — a sharply defined dead area where the diseased tissue is sunken or pinched-off.
canopy — a mass of foliage characterized by density and height, which is said to close when it covers the soil surface.
chaff — the nonseed remnants of a ripened flowering shoot of cereals or other grasses.
chelated — a term in chemistry describing stable bonding around elements, such as iron or zinc, that makes the element available for uptake by plants.
chlamydospore — a thick-walled asexual spore.
chlorosis — an unnaturally pale green or yellow color.
cleistothecium (*pl.* cleistothecia) — a closed ascocarp lacking a specialized opening; asci produced inside contain ascospores that are released when the cleistothecium is ruptured.
coalesce — to run together, as in small lesions merging to form a larger blotch.
coleoptile — a colorless sheath enclosing the first leaves of cereals and other grasses; when the seed germinates, the coleoptile is the first structure to emerge.
complex (disease complex, pathogen complex) — refers to diseases caused by several pathogens, where symptoms caused by individual pathogens are difficult to distinguish.
conidium (*pl.* conidia) — a microscopic, asexual, non-motile fungal spore.
cortex — the soft tissue (parenchyma) between the outer epidermis and the central vascular tissue in stems and roots of many plants.
cotyledon — the first leaf or pair of leaves in a germinating seed, but which remain below ground in many plants.
crown — a region of compacted nodes near the soil surface in a plant, from which both stems and roots arise.
crucifer — a plant belonging in the mustard family (Brassicaceae or Cruciferae).
culm — the stem of plants in the grass family (Poaceae or Gramineae).
cultivar (cv.) — a cultivated genotype of a crop plant produced by plant breeding; includes hybrids, inbreds, open-pollinated and asexually propagated types.
cyst — remains of females of some types of nematodes, containing eggs.
cytoplasm — the main contents of the cells of organisms, excluding the nucleus.

damping-off — a sudden collapse and death of seedlings, before or after emergence, due to soil- or seed-borne pathogens; the stem base is usually pinched off.
desiccant — a drying agent; in agriculture used to dry down a crop artificially.
desiccated — dried.
dicot (dicotyledon) — a plant with two cotyledons; commonly referred to as a broadleaf plant.
diploid — stage with paired chromosomes in the life cycle of organisms.
disc flowers/disc florets — florets that are radially symmetrical, lack showy petals, and are attached to the centre of flowering heads, e.g. sunflower.
disease — harmful deviation from normal functioning of physiological processes, usually accompanied by expression of symptoms; disease may be used as a general term for dysfunctions caused by infectious agents (pathogens) and by noninfectious agents, such as toxic chemicals, deficiencies, environmental conditions, and genetic abnormalities; sometimes the term disease is applied only to dysfunctions caused by pathogens; the others are termed disorders.
disease cycle — the life cycle of the pathogen in relation to the host plant, including the growth stages of the plant and how they relate to pathogen reproduction, how the pathogen survives from one host plant generation to the next, how dispersal occurs during the growing season, and the effects on the host plant; disease cycles may include several life cycles of the pathogen.
disease incidence — the proportion or percentage of diseased plants in a population of plants, usually the crop in a field.
disease prevalence — generally disease incidence on a large geographic scale, such as the percentage of fields in a region where a disease is present.
disease severity — the quantity of disease affecting a plant or population of plants; frequently a measure of the percentage of plant tissue diseased.

dispersal — the spread of infectious material (inoculum) in space.
dissemination — see dispersal.
durable resistance — resistance to a pathogen in a cultivar or species of plant that has remained effective over a long period of cultivation of the plant under conditions favorable to the pathogen.

ear — commonly refers to the female inflorescence (developing cob) of corn plants; sometimes applied to the spike or head of small-grain cereals.
embryo — the undeveloped plant within a seed.
enation — a small swelling or gall on foliage.
endemic — a disease permanently established in an area; usually existing at low stable levels throughout a growing season, but may vary from year to year.
endoparasite — a parasite living inside plant structures.
endosperm — the nutritive tissue outside the embryo in seeds; in some plants, almost nonexistent in mature seeds; in cereals, usually a major part of the mature seed.
enzyme — a natural catalyst for biochemical reactions; all enzymes are proteins.
epidemic — an increase of disease with time; in popular terms, a rapid and severe outbreak of disease.
epidermis — the outermost tissue layer of plant organs.
eradicant — a compound used to control disease after infection.
ergot body — the hard purple black sclerotium (resting structure) that replaces seeds in cereal and other grass flowers infected by the ergot fungus.
essential oils — volatile substances produced by plants that have characteristic flavors or odors.
exudate — a substance that diffuses or oozes from plant structures or diseased tissue; sometimes viscous; exudates from plant roots often stimulate the germination, growth, or directional movement of plant pathogen structures.

facultative parasite/saprophyte — an organism capable of living either as a parasite or a saprophyte.
family — a category of classification in plants; above genus and below order.
flag leaf — the uppermost leaf in cereal and other grass plants; originates from the first node below the head.
fleck — a small spot.
floret — a small flower of a cluster, especially in the grass and sunflower families.
foot — the basal stem area of a plant.
foot rot — necrosis (tissue death) of stem base, crown, and often roots.
forma specialis (f. sp.) (*pl.* formae speciales) — a special form or group within a fungus species that is distinguished chiefly by its ability to infect different plant species, e.g., cereal rusts.
fruiting body — a structure in fungi containing spores.
fungicide — a chemical or biological agent that is toxic to fungi and restricts their growth.
fungus (*pl.* fungi) — a nonphotosynthetic organism which lives as a parasite or saprophyte; its vegetative body is made up of hyphae and it reproduces via microscopic spores.

gall — a swelling or abnormal growth of plant tissue.
genetic recombination — the rearrangement of gene combinations during sexual or parasexual processes in organisms that leads to new (non-parental) genotypes among the offspring, i.e., offspring with potentially new combinations of characteristics.
genotype — the combination of genes in an organism.
genus (*pl.* genera) — a category of classification in plants; above species and below family.
germ — the embryo within a seed; in seed with a large endosperm, the area with the embryo is described as the germ end.
germplasm — the variety of genetic material (i.e., different genotypes) available to plant breeders for developing new cultivars.
germ tube — a hypha produced by a germinating fungal spore.
girdle — to spread around the entire circumference of a stem or root, as for a lesion.
glume — in cereals and other grasses, glumes are leaves that enclose, and are attached at the base of a spikelet; glumes form part of the chaff.
Gramineae (Poaceae) — the plant family that includes cereals and other grasses.
green island — an area of tissue that remains green when most of the plant organ is senescing, usually due to the

release of hormone-like substances by an infecting pathogen.
green manure — crop material that is grown in a field and ploughed in before maturity in order to improve the organic matter content and structure of the soil.
growth regulator — a hormone-like substance applied to a crop to modify its growth characteristics, e.g., to increase yield.

haploid — stage in the life cycle of organisms where chromosomes are not paired.
haustorium (*pl.* haustoria) — a specialized fungal hypha produced within a host cell, and which absorbs nutrients from the cell.
hilum — a scar on a seed or spore left by a detached stalk.
honeydew — a sugary fluid exuded from ergot-infected grass flowers, or excreted by aphids.
host — a living plant on which a parasite develops.
host range — all the host species that can be colonized by a parasite.
hull — the outer covering of some grains, such as barley and oat, consisting of residual bracts.
hybrid — the offspring of sexual reproduction by two individuals differing in one or more genetic characteristics; most cultivars of some crops, such as corn and sunflower, are hybrids.
hydathode — a structure on plant foliage near the end of veins, where drops of water exude from the interior to the surface.
hypersensitive — extremely sensitive; hypersensitive resistance to pathogens occurs when a few plant cells at the site of infection die rapidly and further invasion by the pathogen is arrested.
hypertrophy — abnormal enlargement of cells, tissue, or plant organs.
hypha (*pl.* hyphae) — a tubular vegetative filament of a fungus.
hypocotyl — the portion of a stem below the cotyledons or first leaves.

inbred line — in plant breeding, a line produced by repeated self-fertilization.
incidence — see disease incidence.
infection — invasion and establishment of parasitic relations with a host.
infection cycle — a cyclical process associated with transmission of inoculum (infectious structures) to the surface of the host plant, infection and growth within the host, and production of new inoculum; there may be multiple infection cycles in a single season.
infectious disease — a disease caused by a pathogen that can be transmitted to a healthy plant.
infective — capable of infecting a host; usually applied to a vector carrying a pathogen.
infest — to be present superficially on or in a substrate, such as in soil or crop residue, or to be on or in seed.
inflorescence — the flowering shoot of a plant.
inoculum — any infectious structures of a pathogen, such as fungus spores, bacterial cells, and virus particles.
intercellular — between plant cells.
internode — a portion of the stem between nodes.
interveinal — between veins on a leaf.
intracellular — within plant cells.
isolate — a collection of a single individual of a species of microorganism, and usually the subcultures derived from that collection.

jointing stage — stem elongation stage in cereals.

kernel — the basic fruit of cereals (botanically, the caryopsis made up of pericarp, endosperm and embryo), which may (barley and oat) or may not (wheat) be enclosed in a hull to make up the grain.

latent infection — the state where a host is infected by a pathogen but remains symptomless.
leafhopper — a small insect belonging to a group that feeds by sucking plant sap; may transmit diseases, especially those caused by phytoplasmas.
leaf sheath — the part of the leaf that encircles the stem in grasses.
leaf wetness duration/period — the time during which leaves remain wet after rain, irrigation, or dew; critically important for spore germination and infection of plants by most plant pathogens.
legume — a plant in the family Fabaceae (Leguminosae); these plants typically fix atmospheric nitrogen in root

nodules through a symbiotic relationship with *Rhizobium* bacteria.
lesion — a localized diseased area or wound.
life cycle — the life history or reproductive cycle of an organism; the sequence of events leading from a reproductive unit, such as a spore, through an adult organism to the next generation of reproductive units; in pathogens, frequently involves sexual and asexual processes.
lodge — of plants, to lie flat due to stem breakage or bending.
lumen (*pl.* lumena) — hollow centre of a stem.

macroscopic — visible to the naked eye.
macronutrient — an element required by plants in relatively large quantities, typically nitrogen, phosphorous, potassium, sulphur, carbon, hydrogen, oxygen, magnesium, calcium, and iron.
male-sterile — having nonfunctional or no male sex organs; male-sterile parents may be used in producing hybrid cultivars.
mating types — morphologically identical forms of a fungus species that are self-incompatible, but can mate with a different mating type to produce sexual spores.
melanin — a dark brown pigment, of which different concentrations give yellow or brown coloration.
melanosis — the darkening of tissue due to the accumulation of melanins.
meristem — a localized region of active cell division in plants (e.g., at the tips of roots and shoots) from which new tissues are derived.
metabolite — a product of the metabolism (biochemical reactions) in an organism.
micronutrient — an element required by plants in small (trace) amounts, such as boron, manganese, and copper.
microorganism — any organism of microscopic size, such as a fungus or a bacterium.
microsclerotium (*pl.* microsclerotia) — a sclerotium (resting structure) that is very small (1–3 mm), but visible to the naked eye.
microscopic — visible only with the aid of a magnifying glass or microscope.
midrib — the prominent central vein of a leaf in dicotyledons.
mite — a tiny 8-legged animal belonging to a group related to spiders; may transmit diseases.
mold — a fungus that produces conspicuous superficial mycelium or spores on its host or substrate.
moldboard plowing — cultivation of the soil with a plough that completely turns over the furrow, thereby burying almost all crop residue at the soil surface.
mollicutes — a group of bacteria that do not possess cell walls.
monocot (monocotyledon) — a plant with one cotyledon, narrow leaves, and parallel veins.
monoculture — growing of a single crop repeatedly or exclusively in an area.
mosaic — a pattern of light and dark green, or yellow areas, as on a leaf.
mycelium (*pl.* mycelia) — a collective term for the hyphae produced by fungi.
mycelial germination — the germination of sclerotia (resting bodies) by production of mycelium instead of a fruiting body.
mycotoxin — a toxin produced by a fungus.

neck — the flower stalk (peduncle), or the portion of the culm (stalk) in cereals supporting the head.
necrosis — death of cells, usually characterized by loss of color (whitening) or by darkening or discoloration of tissues.
nematicide — a chemical or other agent used to control nematodes.
nematode — a small, often microscopic, animal that is worm-shaped and lives saprophytically or parasitically.
node — the joint or knot (swelling) on a stem where a leaf or leaves are attached.
nodule — a gall-like swelling on the roots of legumes and a few other plants, in which atmospheric nitrogen is fixed and made available for plant growth by the activity of specialized bacteria; seed of legumes is often treated with bacterial inoculant to promote this process.
noninfectious disease — a disease that is caused by an environmental factor, not a pathogen.
nonpersistent virus transmission — transmission of a virus by an insect vector in which the insect acquires the virus on its mouthparts and becomes immediately infective to other plants; usually the insect remains infective for only a short period.

obligate parasite — a parasite that in nature can grow and complete its life cycle only on a living plant.

oomycetes — a group of microorganisms, formerly considered to be fungi, now considered to belong to a separate kingdom, which produce sexual oospores and have distinctive cell wall composition and nuclear condition.
oospore — a microscopic, thick-walled, sexually-produced, resting spore formed by oomycetes, such as *Pythium, Phytophthora,* and *Albugo.*
open pollination — pollination in flowers that, by the time the male and female organs are mature, are fully open, resulting in cross pollination with other flowers; often accompanied by a system of self-incompatibility.
ostiole — the microscopic opening or pore in some fungal fruiting bodies, through which spores escape.
ovary — a reproductive structure of plants that contains one or more ovules; ripens to form a fruit.
ozone — a highly reactive molecule, formed from the element oxygen, which causes plant injury at very low concentrations; produced in the atmosphere from automobile pollutants.

panicle — an inflorescence that is a loosely branched cluster of florets, as in oat; the lower branches flower first.
parasite — an organism that lives on or in a host organism, harming the host.
parenchyma — a plant tissue that is made up of thin-walled cells; it makes up most of the cortex and pith in dicotyledons and the stem tissue in monocotyledons.
pathogen — an infectious agent capable of causing disease.
pathogenic — capable of causing disease.
pathotype — a group within a pathogen species distinguished by common characteristics of pathogenic ability, such as host range.
pathovar (pv.) — a group within a bacterial species that is distinguished chiefly by its host specificity, i.e., its ability to infect different plant species.
pedigreed seed — seed that according to legislation and regulatory inspection meets defined standards of lineage, germination, purity, and occasionally seed-borne pathogen levels.
peduncle — a stalk bearing a flower or fruit.
perithecium (*pl.* perithecia) — a small flask-like sexual fruiting body of certain fungi; produces asci with ascospores that are released through an opening (ostiole) in the perithecium.
persistent virus transmission — transmission of a virus by an insect vector in which the insect acquires the virus on its mouthparts, then the virus is circulated and accumulated in the insect's tissues before the insect becomes infective to other plants; usually the insect remains infective for a long period.
petiole — a leaf stalk.
pH — a measure of acidity (below pH: 7) and alkalinity (above pH: 7).
phenotype — the physical manifestation of one or more genetic traits (characteristics).
phloem — the food-conducting tissue of plants.
photosynthesis — the light-dependent process in plants by which organic compounds are synthesised from water and carbon dioxide.
phyllody — the conversion of nonleaves into leaf-like structures.
physiologic race — see race.
phytoplasma — a mollicute (specialized type of bacteria) that is pathogenic to plants.
phytotoxic — toxic to plants.
pith — the central, soft (parenchyma) tissue in stems of dicot plants.
plasmodium (*pl.* plasmodia) — a microscopic multinucleate cell without a rigid wall, produced by some plant pathogens, sometimes inside host cells.
Poaceae — see Gramineae.
polygenic — a trait (character) controlled by many genes.
predispose — to make prone to disease.
prevalence — see disease prevalence.
primary infection — the first infection of plants; in most field crops caused by the overwintering or oversummering inoculum.
primary inoculum — the inoculum of the pathogen that causes primary infection in a crop.
primary root ─ the first root developing from a seed.
prop roots — adventitious roots that grow from stems in some plants and serve to support the stems; prominent in plants such as corn.
protectant — a compound used to control disease by inhibiting or preventing infection.
pseudothecium (*pl.* pseudothecia) — a small sexual fruiting body of certain fungi resembling a perithecium, but of

different developmental origin; produces asci inside with ascospores that are released through an opening in the pseudothecium.
pulse crop — a dry, edible legume crop, such as pea, bean, lentil, and chickpea.
pustule — blister-like spot or lesion on a plant, usually with fungal spores.
pycnidiospore — a conidium (asexual spore) produced in a pycnidium.
pycnidium (*pl.* pycnidia) — a flask-like asexual fruiting body (1–2 mm) producing conidia inside, which escape through an opening (ostiole).
pycniospore — a microscopic haploid spermatium of a rust fungus that functions only in sexual reproduction; formed in a pycnium (spermagonium) that originates from basidiospore infection.
pycnium (*pl.* pycnia) — a flask-shaped structure (0.5 mm) in rust fungi that produces pycniospores (spermatia).

quarantine — the establishment of exclusion barriers or enforced isolation of plant materials to prevent or reduce the spread of diseases and pests.

race (physiologic race) — a genetically distinct group within a species of plant pathogen characterized by being specific to one or more cultivars of the host plant(s).
raceme — a flowering shoot of indeterminate growth with an elongate axis that bears flowers on stalks (pedicels) of equal length.
rachilla — the axis of the spikelet (a small cluster of florets) in a plant in the grass family.
rachis — the central axis of the flowering shoot of cereals and other grasses.
radicle — the main root of a germinating seedling.
rain splash — a mechanism by which pathogen inoculum, especially bacterial cells and some types of fungal spores, are dispersed; generally dispersal distance is limited.
rate-reducing resistance — resistance to a pathogen that works by slowing the progress of an epidemic through subtle quantitative effects on processes such as host penetration by germinating spores, and the length of the incubation period before symptoms appear.
resistance — the ability of a plant to withstand attack by a pathogen, by limiting or preventing infection, or by restricting development of the pathogen in the plant.
residue-borne — survival of pathogen inoculum in crop residue.
resting spore — a spore adapted for surviving unfavorable conditions; usually thick-walled.
resting stage — a pathogen structure adapted for surviving unfavorable conditions.
reticulate — net-like.
rogue — to remove diseased plants from a crop in order to prevent spread to healthy plants.
rosette leaves — in some plants, such as crucifers, leaves that form in a circular pattern before flowering, which are close to each other and close to the ground because the internodes on the stem are very short.
rotation — the growing of different crops in succession in a field.

sanitation — the control of disease by removal of infectious material by such practices as burning infested crop residue, disinfecting machinery, etc.
saprophyte — an organism that utilizes dead or decaying organic matter as food.
sclerotium (*pl.* sclerotia) — a mass of fungus mycelium that serves as a resting structure; often hard and compact, and may be macroscopic or small (microsclerotium).
secondary inoculum — inoculum that develops at primary infection sites and serves to spread a disease within a crop during the growing season.
secondary root — a lateral root or branch from the primary root.
seed-borne — survival of pathogen inoculum in or on seed.
seed treatment — a substance applied to seed to control pathogens on or in the seed, and to protect the seed and plant from pathogens, especially during the early stages of plant growth.
senescence — aging.
sequester — to acquire and bind, as with the element iron for plant growth.
severity — see disease severity.
seta (*pl.* setae) — a bristle-like or spiny structure, usually on a fungus fruiting body.
sheath — see leaf sheath.
shepherd's crook — a symptom in diseases, especially blights or wilts, that cause rapid death and shrinkage of

young stems; the tip of the diseased or dead stem curls up to resemble the hooked end of the staff (crook) once used by shepherds.
silk — colloquial name for the long pistils produced by florets in the female inflorescence (cob) of corn, which protrude from the end of the husk; hence, "silking" is the time of appearance of silks.
site-specific fungicide — a fungicide which acts by affecting a single biochemical process or cellular membrane system in fungi; the risk of fungal pathogens developing insensitivity to site-specific fungicides is high.
soil-borne — survival of pathogen inoculum in soil.
sorus (*pl.* sori) — a spore mass, especially in rusts and smuts; e.g. uredinium, telium.
sp. (*pl.* spp.) — species.
species — a category of classification in organisms, below genus; theoretically consisting of a group of similar individuals capable of interbreeding.
spermatium (*pl.* spermatia) — a haploid sex cell in fungi, capable of taking part in fertilization, e.g., pycniospore of rusts.
spike — an elongate unbranched inflorescence (flowering shoot) with spikelets, commonly called the head in many cereals.
spikelet — a part of a spike with basal glumes, containing several florets.
sporangium (*pl.* sporangia) — a microscopic fungal fruiting structure containing asexual spores, which may be motile or non-motile.
spore — a microscopic single-celled or multicellular reproductive structure of fungi; sexual or asexual.
sporidium (*pl.* sporidia) — a microscopic basidiospore in rusts and smut fungi.
sporodochium (*pl.* sporodochia) — a superficial, cushion-like, fungal fruiting body (1–2 mm) bearing conidia (asexual spores) on the surface.
sporulation — the production of spores.
stigma — the part of a pistil (female organ) in a flower that receives the pollen; often sticky, or feathery.
stipule — a green outgrowth at the base of leaf stalks, usually small and scaly, but large and similar to leaves in some plants, such as pea.
strain — a group of similar isolates of a pathogen, differering from other strains biologically or chemically.
stoma (*pl.* stomata) — a microscopic specialized opening in plant epidermis; allows for exchange of carbon dioxide, oxygen, and water vapor with the environment.
stroma (*pl.* stromata) — a compact mass of fungal hyphae on which reproductive structures are usually formed.
stubble-borne — survival of pathogen inoculum on crop residue.
stylet ─ a structure (the mouth spear) in the mouthparts of nematodes, which penetrates plant cell walls and allows the nematode to feed on the cell contents.
subcrown internode — (= mesocotyl) the below-ground stem tissue in cereals between the seed and crown.
subspecies (subsp.) — a category in the classification of organisms below the level of species; usually differentiated from other subspecies by geographic separation or small structural or biochemical differences.
summerfallow — the practice of leaving a field fallow (without a crop) during the summer; often it is bare fallow, maintained by regular cultivation or herbicide application.
susceptible — lacking ability to resist a disease or attack by a pathogen.
suture — a line of junction or seam, usually between parts of a fruit.
symptom — a visible external or internal sign of disease in a plant.
systemic — spreading through the plant from within; applies to some pathogens and some fungicides.

tassel — the male flowering shoot of corn and some other plants.
telium (*pl.* telia) — a group or pustule of teliospores.
teliospore — a resting or overwintering sexual spore of rust and smut fungi, often with thick, dark walls; germinates to produce a basidium.
testa (*pl.* testae) — a seed coat.
threshold level — a disease level at which control measures are recommended.
tiller — a shoot or culm produced from a bud on the plant crown.
tissue — a group of microscopic cells together serving one or more specific functions in an organism.
tolerance — (a) the ability of a plant cultivar to withstand attack by a pathogen and develop substantial symptoms without suffering severe yield loss, (b) according to law or guidelines, the allowable or recommended amount of toxic residue in a harvested plant part, or (c) the maximum amount of infection by a pathogen in a seed lot that will

not lead to significant disease development.
transmission — the spread of a pathogen from plant to plant, structure to structure (such as leaf to fruit), or season to season.
translucent — allowing light to pass through, but not completely transparent.
transpiration — water loss through plant foliage; responsible for upward movement of water in the plant (the transpiration stream).
true leaf — any leaf produced after the cotyledons (seed leaves).
turgid — the state in which cells and tissues or an organism are full of water.

ubiquitous — occurring everywhere.
umbel — a flowering shoot in which the stalks of the flowers all arise from the top of the stem and radiate like umbrella ribs; there are both simple and compound umbels.
urediniospore — a microscopic asexual spore of rust fungi, produced in a uredinium; the red brown summer spores that give rust fungi their name.
uredinium (*pl.* uredinia) — a pustule of urediniospores.

variety (var.) — a category in classification below species, which differs distinctly from other varieties within the species, but may be able to interbreed with them; similar to subspecies.
vascular tissue — the tissue in a plant involved in conducting fluids.
vector — an organism that carries and transmits inoculum of a pathogen from one plant to another.
vein — the rib-like bundles of vascular tissue in a leaf.
virescence — the abnormal greening of flower parts.
viroid — a short strand of infectious ribonucleic acid; the smallest known plant pathogen.
virulence — the relative capacity to cause disease; usually the ability of a particular race or strain of a pathogen species to attack one or more cultivars of a host plant.
virulence phenotype — a genetically distinct group (race) within a species of rust, smut, or powdery mildew fungi, characterized by being specific to (i.e., expressing virulence on) one or more cultivars of the host plants.
virulent — being pathogenic, usually with respect to a particular cultivar of host plant.
viruliferous — the carrying of a virus by a vector.
virus — a pathogen consisting mainly of nucleic acids surrounded by a protein coat.
vitreous — glass-like, as in hard red spring wheat kernels.

water-soaked — a symptom of disease on green tissue, which appears oily or wet, dark, and somewhat translucent.
whitehead — a bleached, unfilled, prematurely ripened cereal head; caused by diseases or insects.
wilt — the drooping or loss of turgor of plant tissues due to insufficient water uptake.
wirestem — a symptom, mostly on seedlings, in which part of the hypocotyl or stem base is severely shriveled and appears like a thin wire.
witches' broom — an abnormal, dense cluster of small twigs, branches, or roots that results from excessive lateral growth, due to pathogen or insect attack, or environmental factors.

xylem — the tissue in plants that conducts water upwards.

yellows — a plant disease where the major symptoms are yellowing and stunting of the host, usually caused by a virus or phytoplasma.

zonate — having concentric lines, often forming alternate light and dark areas, usually referring to disease lesions.
zoospore — an asexual spore that is motile in water.

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