

PEST AND PEST CONTROL

Pest- any undesirable organism that is injurious to plants, either directly (ex. insects, or fungi) or indirectly (ex. weeds).

THREE PREREQUISITES OF PEST DAMAGE OR INFECTION

- 1) **plant susceptible**
- 2) **pest present**
- 3) **proper environment**

PEST DAMAGE CONTROL

- 1) **Plant Resistance**
 - a) **Genetic Resistance** - this is the "ideal" method of pest damage control
 - 2) **Proper Environment**
 - a) **Favorable for plant**
 - b) **Unfavorable for pest**
 - 3) **Eliminate Pest**
 - a) **Quarantine** - usually governmentally imposed
 - b) **Sanitation** - wash pots and tools, hoses off ground, propagate clean plants, etc.
 - c) **Physical Control** - bug traps, screens, sticky boards, etc.
 - d) **Biological Control** - the use of one organism to control another organism.
 - 1) *Bacillus thuringiensis* - a bacterium that controls caterpillars
 - 2) grass carp (or white amour) - a fish that eats submerged aquatic weeds
 - 3) predaceous mites - eat other mites and small insects
 - 4) parasitic wasps - lay eggs inside other insects
 - 5) *Trichoderma* - a fungus that controls other fungi
 - 6) **allelopathy** - secretion of chemicals by one plant that retards the growth of surrounding plants
 - e) **Pesticides**- chemicals used to control pests; ex. fungicide, bactericide, insecticide, miticide, herbicide.
- Modes of Action**
- 1) **Contact Pesticide** (insects and weeds)
 - 2) **Systemic Pesticide** (insects and weeds)
 - 3) **Stomach Poison** (insects only)

Integrated Pest Management (IPM) - the use of all strategies of pest damage control (resistance, cultural, biological, environmental and chemical) to minimize the economic impact of pests.

TYPES OF PESTS - INSECTS

INSECTS

Class Insecta












Characterized by:

- **6 legs**
- **3 body regions; head, thorax, abdomen**
- **1 pair antenna**
- **wings (may be reduced or vestigial)**

Order Homoptera - very common insect pests on horticultural crops

Characterized by:

- o **sucking mouth parts** that extract phloem sap
- o secretion of **honey dew** - a sugary liquid secreted by Homoptera
- o presence of **sooty mold** - a black to brown mold that grows on honey dew on the leaf surface (does not infect plant)
- o includes aphids, mealybugs, scale and whitefly listed below

	1) aphid - sucking mouth parts; small soft bodies, green, brown or black; around growing point; ants may "farm".
	2) mealybug - sucking mouth parts; soft bodies covered with cottony wax filaments
	3) scale - sucking mouth parts; covered by a hard shell
	4) whitefly - immature with sucking mouth parts; as translucent ovals under the leaf; adults as small white flies
	5) thrips - rasping-sucking mouth parts; cause lesions on young leaves and flower petals
	6) leaf miner - bore meandering tunnels through leaves
	7) caterpillar - have chewing mouth parts and eat whole tissues; leave droppings
	8) grub and borer - larva of beetles; feed on roots, bore into wood of stems
	9) beetle - have chewing mouth parts and eat whole tissues
	10) grasshopper - have chewing mouth parts and eat whole tissues
	11) weevil - feed mainly on stored grain.

MITES

Class Arachnida (mites, spiders, ticks, scorpions)

Characterized by:

- **8 legs**
- **2 body regions; cephalothorax, abdomen**
- **no antenna or wings**



1) **spider mite, red spider or spotted mite** - very small; cause a fine yellow speckling on leaves where they feed, and form webs when severe

NEMATODES - eel or wire worms (extremely small)



1) **root-knot nematode** - bore into roots and cause the root to have a swollen, knotted appearance.

MOLLUSK

1) **snails** - with shells; chew on young plant parts, soft tissue; leave slime trails



2) **slugs** - without shells; chew on young plant parts, soft tissue; leave slime trails.

page 100

TYPES OF PESTS - DISEASES CAUSING PESTS AND WEEDS**DISEASE-CAUSING PESTS**

pathogens - microorganisms that invade, infect and cause damage to another living organism.

Type Microorganism	Appearance/Symptoms on Plant
<p>1) fungi long, multicellular filamentous microorganisms composed of membrane-bounded cells surrounded by cell walls</p>	<ul style="list-style-type: none"> • moldy or powdery appearance on leaf • causes necrotic spots
<p>2) bacteria usually rod shaped, single-celled (may form filaments) microorganisms composed of a membrane-bounded cell surrounded by a cell wall.</p>	<ul style="list-style-type: none"> • causes soft, mushy, odorous regions on leaves or stems, "soft rot" • causes circular, ringed lesions

3) virus

rod-shaped, spherical or crystalline-shaped microorganisms composed of strands of nucleic acids surrounded by a protein coat.

- causes yellow mosaic or mottling of leaves

4) mycoplasma and spiroplasma

pleomorphic (means takes on shape of the organism it is in) microorganisms with membrane-bounded cells, but without cell walls.

5) rickettsia-like organisms

bacteria-like organisms that can only live inside living cells

WEEDS - any plant out of place.

Cause Damage by:

- 1) **competition**
- 2) **allelopathy**
- 3) **expense**
- 4) **disease and insect hosts**
- 5) **contaminate foods**
- 6) **poisonous**
- 7) **aesthetically undesirable**
- 8) **parasite**, ex. dodder, mistletoe

Go to: [Table of Contents](#) | [Introduction](#) | [Anatomy](#) | [Physiology](#) | [Hormones](#) | [Temperature](#) | [Light](#) | [Water](#) | [Soil](#) | [Nutrition](#) | [Propagation](#) | [Pruning](#) | [Pests](#) |

Page: [1](#) [2](#) [3](#) [4](#) [5](#) [6](#) [7](#) [8](#) [9](#) [10](#) [11](#) [12](#) [13](#) [14](#) [15](#) [16](#) [17](#) [18](#) [19](#) [20](#) [21](#) [22](#) [23](#) [24](#) [25](#) [26](#) [27](#) [28](#) [29](#) [30](#) [31](#) [32](#) [33](#) [34](#) [35](#) [36](#) [37](#) [38](#) [39](#) [40](#) [41](#) [42](#) [43](#) [44](#) [45](#) [46](#) [47](#) [48](#) [49](#) [50](#) [51](#) [52](#) [53](#) [54](#) [55](#) [56](#) [57](#) [58](#) [59](#) [60](#) [61](#) [62](#) [63](#) [64](#) [65](#) [66](#) [67](#) [68](#) [69](#) [70](#) [71](#) [72](#) [73](#) [74](#) [75](#) [76](#) [77](#) [78](#) [79](#) [80](#) [81](#) [82](#) [83](#) [84](#) [85](#) [86](#) [87](#) [88](#) [89](#) [90](#) [91](#) [92](#) [93](#) [94](#) [95](#) [96](#) [97](#) [98](#) [99](#) [100](#)