Floriculture Disorders

(component of Practicum)

Kansas FFA Floriculture CDE

KANSAS STATE UNIVERSITY

Information about Floriculture Disorders

- Disorders will be a component of the Floriculture Practicum
- Pest and disorder items may be presented as an intact specimen, photograph or preserved specimen (herbarium sheet, insect mount, etc.)
- Each specimen will be designated by a station number
- For each specimen the participant may be asked to:
  1. determine the classification (nutritional/ environmental, insect/ pest, or disease) of the disorder
  2. identify/ name the disorder correctly
  3. correctly give the chemical AND cultural controls for the disorder
  4. An example of how a disorder is scored: 5 points total – 1 pnt for correctly determining classification, 2 pnts for correctly identifying the disorder, 1 pnt for correctly labeling chemical control, and 1 pnt for correctly labeling biological control
- No specimens or items should be touched or handled
- Refer to the National Floriculture CDE Disorder Practicum Scorecard for additional details

Disorder Practicum Scorecard

NAME _____ MEMBER NUMBER _____

CHAPTER _____ STATE _____ TEAM NUMBER _____

		Member Answer	Possible Points	Member Score
1.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/ Biological Control #:		1	
2.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/ Biological Control #:		1	
3.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/ Biological Control #:		1	
4.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/ Biological Control #:		1	
5.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/ Biological Control #:		1	
6.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/ Biological Control #:		1	
7.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/ Biological Control #:		1	
8.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/ Biological Control #:		1	

		Member Answer	Possible Points	Member Score
9.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/ Biological Control #:		1	
10.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/ Biological Control #:		1	
11.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/ Biological Control #:		1	
12.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/ Biological Control #:		1	
13.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/ Biological Control #:		1	
14.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/ Biological Control #:		1	
15.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/ Biological Control #:		1	
	TOTAL POINTS		75	

CLASSIFICATION:
100 Diseases
101 Insects/ Pests / Mites
102 Nutritional/ Environmental

IDENTIFICATION:
200 Aphids
201 Black Leaf Spot
202 Botrytis – Grey Mold
203 Damping-off
204 Downy Mildew
205 Ethylene Damage
206 Fungus Gnats
207 Insufficient Watering
208 Iron Deficiency
209 Leaf Miner
210 Leafhopper
211 Mealybugs
212 Nitrogen Deficiency
213 Phosphorus Deficiency
214 Powdery Mildew
215 Root Rot
216 Rust
217 Scale
218 Shore Flies
219 Snails/ Slugs
220 Spider Mites
221 Stem Rot
222 Thrips
223 Tospovirus (INSV and TSWV)
224 Whiteflies

CHEMICAL CONTROL:
400 Fungicide
401 Insecticide
402 Miticide
403 Molluscicide
404 No Treatment Listed

CULTURAL CONTROL:
500 Apply Complete Fertilizer
501 Correct/ Adjust Temperature
502 Correct/ Adjust Watering
503 Ladybird Beetles
504 Nematodes
505 Parasitic Wasps
506 Predatory Mites
507 Reduce Relative Humidity
508 No Treatment Listed

Classification:
NUTRITIONAL AND ENVIRONMENTAL DISORDERS

COLD TEMPERATURE (FREEZE)

Symptoms:
Cell damage occurs when plants are exposed to temperatures below their hardiness.

Chemical Control:
No Treatment Listed

Cultural Control:
Correct / Adjust Temperature

COLD WATER DAMAGE

Caused by watering the foliage of the plant with cold water.

Often occurs on plants with hairy leaves.

Chemical Control:
No Treatment Listed

Cultural Control:
Correct/ Adjust Temperature

ETHYLENE DAMAGE

(plant pictured on right)

Can cause a distorted corkscrew type of stem growth, curling of leaves, narrow leaves, abortion of buds and possible death of the plant.

Chemical Control:
No Treatment Listed

Cultural Control:
No Treatment Listed

INSUFFICIENT WATER DAMAGE

Plant will show signs of wilt, thus retarding photosynthesis and slowing plant growth. The elongation of young developing cells is reduced resulting in smaller leaves and shorter stem internodes. In extreme cases, the cells of leaf or petal margins may die or leaves may abscise (fall off the plant).

Chemical Control:
No Treatment Listed

Cultural Control:
Correct/ Adjust Watering

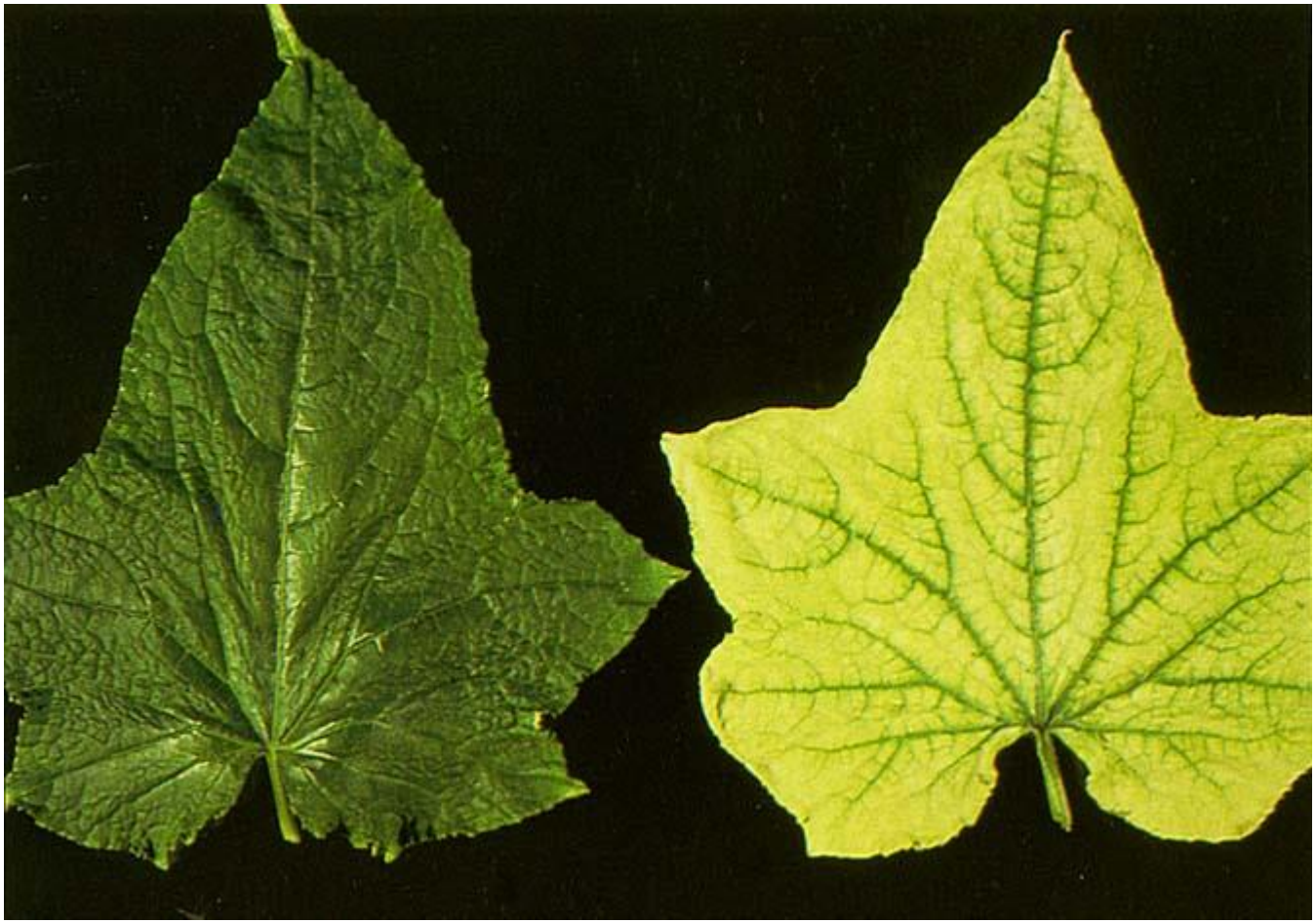
IRON DEFICIENCY

(leaf pictured on the right)

Interveinal chlorosis of young leaves. In late stages, the leaf blade may lose nearly all pigment taking on a white appearance and finally turning necrotic.

Chemical Control:
No Treatment Listed

Cultural Control:
Apply Complete Fertilizer



NITROGEN DEFICIENCY

The older leaves become uniformly chlorotic then progress to a solid yellow. After considerable time, older leaves become necrotic and drop off.

Chemical Control:
No Treatment Listed

Cultural Control:
Apply Complete Fertilizer

PHOSPHORUS DEFICIENCY

The plant becomes severely stunted and at the same time the foliage becomes deeper green than normal. The older leaves develop purple coloration.

Chemical Control:
No Treatment Listed

Cultural Control:
Apply Complete Fertilizer

Classification:
DISEASES

BOTRYTIS

Symptoms of Botrytis vary greatly depending on the host and plant part affected.

Generalized symptoms include a gray to brown discoloration and a fuzzy whitish gray to tan mold growing on the tissue surface

Also known as "Gray Mold"

Chemical Control: Fungicide

Cultural Control: Reduce Relative Humidity

DOWNY MILDEW

Downy mildew colonies often appear first on the underside of leaves, and they sometimes have a bluish tinge. In many cases, they can grow systemically throughout the plant.

Chemical Control:
Fungicide

Cultural Control:
Reduce Relative Humidity

BLACK SPOT

Brown or black circular or angular areas of dead tissue.

This disease infects the leaves and greatly reduces plant vigour.

Chemical Control:
No Treatment Listed

Cultural Control:
Correct/ Adjust Watering

POWDERY MILDEW

- Mold that is white/gray in color
- Flat mold that grows along the top surface of the leaf

Chemical Control:
Fungicide

Cultural Control:
Reduce Relative Humidity

ROOT ROT

Growth of infected plants slows as compared to healthy plants. Older leaves yellow and drop. Margins of leaves die.

Roots appear dark brown or black and few or no white roots or root tips can be found when the root ball is washed free of soil.

Chemical Control: Fungicide

Cultural Control: Correct/ Adjust Watering

RUST

Pale leaf spots eventually develop into spore-producing structures called pustules. The pustules are found most commonly on the lower leaf surface and produce huge numbers of microscopic spores. Pustules can be orange, yellow, brown, black or white.

Chemical Control:
Fungicide

Cultural Control:
Correct/ Adjust Watering

STEM ROT

Spots of various sizes occur on the stem, at or near the soil level and on the roots. These spots may vary in color from gray, brown, black, or even bright red. Frequently, these fungi cause the tips of fibrous roots to decay. Wilting, dieback, and poor vigor are common symptoms.

Chemical Control: Fungicide

Cultural Control: Correct/ Adjust Watering

TOSPOVIRUS (INSV AND TSWV)

The most common symptoms of virus infection are stunting or dwarfing. Leaves may also show distinctive symptoms such as spots, streaks, blotches, and rings of light green, yellow, brown, or black or they may develop uniform yellow or orange coloration. Leaves also may change in size or shape, either puckering or developing rolled margins.

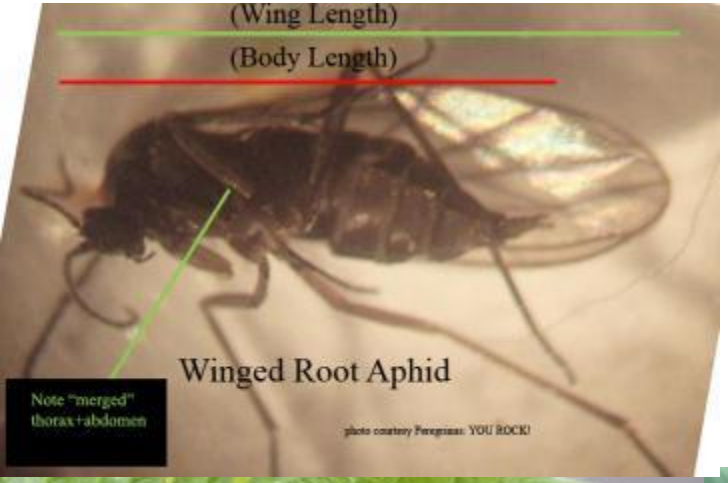
Chemical Control:
No Treatment Listed

Cultural Control:
No Treatment Listed

Classification:
INSECTS AND PESTS

APHIDS

Always appear in large groups, can be many different colors and sizes



Chemical Control: Insecticide

Cultural Control: Ladybird Beetles

Produces a sap (honeydew) that promote the growth of black sooty mold (seen below)

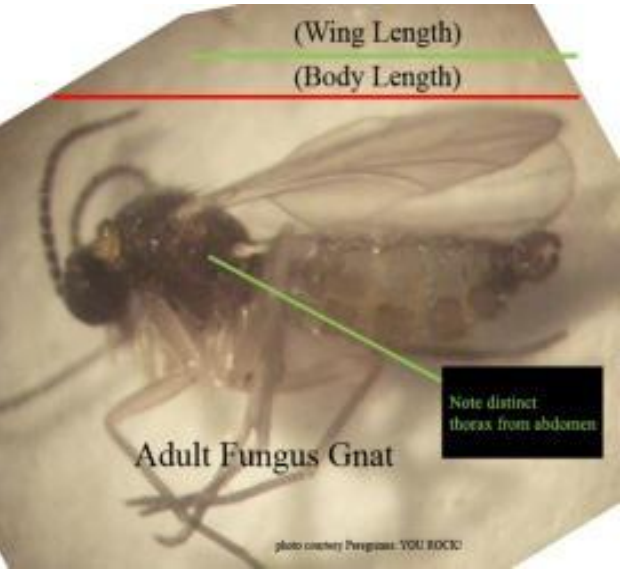
Can also cause leaf curling/ distortion on new growth

FUNGUS GNAT

Looks like a small fly and has very long antennae. Wings have a y-shaped vein.

Figure 2- Wilting from fungus gnat larvae feeding damage to roots of vinca

Fungus Gnat larvae feed on the roots of the plants



Chemical Control: Insecticide

Cultural Control: Nematodes

LEAF MINER

Leafminer larvae

Leafminer adult

Leafminer mining damage

Chemical Control:
Insecticide

Cultural Control:
Parasitic Wasps

LEAFHOPPER

Feeding damage from some species causes small white spots (stippling) to appear on the upper leaf surface, usually beginning near the leaf midrib. Stippled areas can unite into larger whitish blotches on mature leaves. With some plants, feeding damage causes a drying and yellowing (or browning) of leaf margins, and possibly the whole leaf. Some leafhopper species cause curling or stunting of terminal leaves with their feeding.

Chemical Control: Insecticide

Cultural Control: Parasitic Wasps

MEALYBUGS

White in color, they usually start in small groups.

Mealybugs feed by sucking plant juices which weakens the plant and causes the plant's leaves to turn yellow, wilt and drop. The insects also produce honeydew, a sticky substance that increases sooty mold growth on plants and attracts feeding ants.

The webbing around some is the female laying eggs or an already formed egg mass

Chemical Control:
Insecticide

Cultural Control:
No Treatment Listed
(Lady Beetles & Parasitic Wasps are not considered a cultural control because they have not been deemed effective.)

SCALE

Scale can be found on the stems of the plant and the underside of the leaves. Scale can be several different colors. Scale can also be flat bodied and sit very close to the plant or sit more raised up on the surface.

The scale insects infest both the leaves and the stems of the host plants, and feed by inserting needle-like mouthparts into the plant tissue and sucking out plant sap. Feeding injury may result in poor growth and stunted plants.

Chemical Control:
Insecticide

Cultural Control:
No Treatment Listed
(Parasitic Wasps are not considered a cultural control because they have not been deemed effective.)

Hard bodied scale

SHORE FLIES

Shore Flies deposit characteristic black "fly specks" on foliage that are unsightly. Larvae are considered algae feeders, and do not feed on crop plant tissue. Adult shore flies are capable of transmitting Pythium and other root disease organisms.

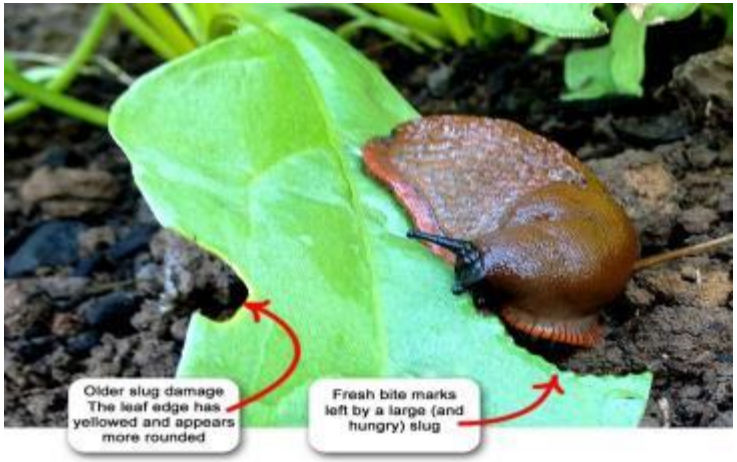
Algal growth and shore flies are common in misted propagation areas, and diseases are particularly severe to young plants during propagation.

Chemical Control:
Insecticide

Cultural Control:
Correct/ Adjust Watering

SLUG

Unsegmented, soft, and slimy body – <u>does not have a shell</u>.



Slugs sometimes leave behind slime trails, which can be seen as a silvery deposit on hard surface, leaves and stems. Slugs can make irregular holes in plant tissue with their rasping mouth parts. They can kill young seedlings by completely eating them.

Slug damage

Chemical Control: Mulluscicide

Cultural Control: Nematode

SNAIL

Chemical Control:
Mulluscicide

Cultural Control:
No Treatment Listed

Snails, which have shells, sometimes leave behind slime trails, which can be seen as a silvery deposit on leaves, stems, soil and hard surfaces

Snails make irregular holes in plant tissues with their rasping mouthparts. Young shoots and leaves are damaged or eaten, not only at ground level but often high up.

SPIDER MITES

Notice speckling on the leaves from spider mite damage

Also produce webbing between leaves of plant

Symptoms of injury include flecking, discoloration (bronzing) and scorching of leaves. Injury can lead to leaf loss and even plant death.

Appear in large groups and adults have 8 legs

Chemical Control: Miticide

Cultural Control: Predatory Mites

THRIPS

Tiny, hard to see without a lens, dark bodies insect

Feeding damage on the petals of a flower

Often can be found inside the actual flowers of the plant

Chemical Control: Insecticide

Cultural Control: Predatory Mites

Thrips feeding on plants can damage fruit, leaves, and shoots and affect plants' cosmetic appearance.
Thrips feeding can stunt plant growth and cause damaged leaves to become papery and distorted, develop tiny pale spots (stippling), and drop prematurely.
Petals may exhibit color break which is pale or dark discoloration of petal tissue that was killed by thrips feeding before buds opened.
On some plants thrips can cause severe stunting to the early season flush of terminal growth.

Damage on blueberries

Damage to a florists' chrysanthemum leaf

WHITEFLY

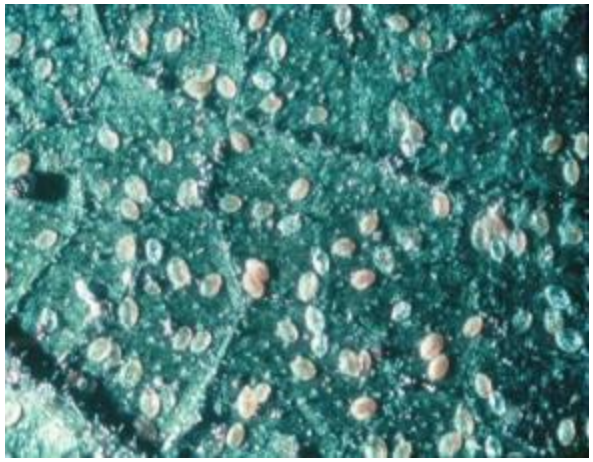
The most obvious whitefly feeding damage symptoms are stem blanching, chlorotic spots, leaf yellowing and shedding, and plant death.

Whiteflies are small, white, winged insects.

Are normally found on the underside of the leaf

Chemical Control: Insecticide

Cultural Control: Parasitic Wasps



Lay eggs on the bottom of leaves, often egg castings (remains) are still visible even after they have hatched

KEY REFERENCE

Greenhouse Operation and Management – Paul V. Nelson – Pearson/ Prentice Hall

Example Questions: