Tips on Scouting Herb Bedding Plants
Pest and Disease ID

Leanne Pundt
UConn Extension
www.ipm.uconn.edu
Scouting for Aphids

- Yellow sticky cards will only trap winged adults, visual inspection is needed.
- Wide host range. Look for wingless aphids on the young tender growth of basil, curry plant, dill, lavender, lemon balm, lemon verbena, mint, oregano, rosemary, rue, sage, thyme ...
- White, cast skins, shiny honeydew, sooty mold and the presence of ants are signs of aphids.
- When releasing host specific parasitic wasps, identification to species is needed.
Aphids

Look for cornicles (‘“tailpipes”’) at the end of the abdomen.
Aphids feeding on the underside of basil leaves.
Green Peach Aphids

Molting or cast skins of aphids on basil.

L. Pundt, UConn
Look for a pronounced indentation between the base of the antennae, with protrusions that aim toward each other.
Foxglove aphids may cause more leaf distortion than other aphid species.
Foxglove Aphid

Shiny light yellowish green aphid with dark green patches at the base of the cornicles, and black markings on legs & antennae.

D. Gilrein, Cornell
Melon Aphids

Light green, dark green to yellow to dark olive melon aphids have short, entirely black cornicles.
Melon Aphids

Between the antennae, the top of the head lacks the indentation found in green peach aphids.

L. Pundt, UConn
Aphid Mummies

Parasitic wasp larvae (*Aphidius* sp.) have parasitized these aphids known as “aphid mummies”.

L. Pundt, UConn
Aphid Mummies

Look for the round exit hole, where the adult parasitic wasp has emerged.
Aphid mummy on left, young aphid nymph on right.
Scouting for Fungus Gnats

- Use yellow sticky cards (horizontal placement is best) or vertical placement near growing media to attract winged adults.
- Use potato chunks or slices to monitor for larvae. Check after two days.
- Look for larval feeding damage on young seedlings, in propagation houses.
- Fungus gnats have a wide host range, and are favored by moist habitats.
Adult fungus gnats are mosquito-like in body shape, with long legs, a clear pair of wings, & long beaded antennae. Look for distinct Y pattern on the wings.
Fungus Gnat Larva

Use potato slices to monitor for the black headed larvae.
Fungus Gnat Larva

¼ inch long, opaque to white, black headed legless larva, that feeds on young roots.
Shore Fly Adult

L. Pundt, UConn
Shore fly adult

Shore fly adult near algae, it’s food source.

L. Pundt, UConn
Shore flies black droppings (frass) on leaves may be unsightly.
Beneficial Hunter flies

Hunter flies have clear wings with no spots and are about twice the size of shore flies.

L. Pundt, UConn
Scouting for Spider Mites

• Visual inspection is needed as the wingless mites will not be found on sticky cards.

• Wide host range. Look on underside of leaves, along the leaf vein on lavender, lemon balm, lemon grass, lemon verbena, mint, oregano, pineapple sage, sage....

• Especially near hot, dry areas of a greenhouse.
Spider Mite Feeding Damage

Damage (stippling and flecking) caused by two spotted spider mites.

L. Pundt, UConn
Leaves may also turn yellow, resembling a nutritional disorder.
Spider Mites

Look on underside of leaves, especially along the midvein for small, 1/50 inch long, greenish to orange mite with characteristic two dark spots on either side of abdomen. Look for their spherical round eggs. (Predatory mite eggs are oblong or football shaped.)
Two-spotted spider mites, round eggs and bright red diapausing or overwintering spider mite.
Four lined Plant Bug Feeding Damage

Note: round, circular leaf spots resembling a leaf spot disease on this oregano.

L. Pundt, UConn
Four lined plant bug adult and feeding damage on mint.

L. Pundt, UConn
Four Lined Plant Bug

Bright red, young nymph on mint leaves.

L. Pundt, UConn
Scouting for Mealybugs

• Look for white flecks or cottony residues along leaf midribs, on leaf or stem axils, and underside of leaves.

• Some key hosts include jasmine, and scented geraniums...

• Shiny honeydew, black sooty mold fungus and the presence of ants are signs of mealybugs.
Mealybugs

Mealybugs feeding on scented geraniums.
Citrus mealybug has short, waxy filaments of equal length all around its margin; a dark stripe may be visible down its back.
Spittlebugs

Frothy mass on stems is protecting the young spittlebug nymphs feeding on this tarragon.
Scouting for thrips

• Yellow sticky cards are needed to detect early infestations.
• Wide host range.
• Look for thrips adults and larvae and their damage (white scarring, distorted growth, small fecal spots) especially on basil, French tarragon, lemon grass, mint, rosemary (flowers), sage, and thyme....
Adult thrips

Small, (1/16 inch long) cigar shaped winged insects.
Adult thrips

Male thrips on left & female western flower thrips on right.
Thrips Feeding Damage

Leaves have a characteristic “silvery” appearance with leaf scarring and distorted growth on this French tarragon.
Leaves have a characteristic “silvery” appearance with leaf scarring on basil.
Brown Soft Scale

Brown, soft scale on bay.

L. Pundt, UConn
Scale on Bay

Close-up of immature crawlers along leaf vein.
Scouting for Greenhouse Whiteflies

• Yellow sticky cards can be used to monitor for adults.

• Look on underside of leaves for eggs, immature nymphs, pupae and adults on basil, costmary, lavender, lemon balm, lemon verbena, marjoram, mints, oregano, pineapple sage, rosemary, rue, sage, scented geraniums...

• Especially on overwintering stock plants.
Greenhouse Whiteflies

Greenhouse whiteflies on underside of leaves of costmary.

L. Pundt, UConn
Greenhouse whitefly adults

Small (1/16 inch long) insects with distinct white powdery wings found on underside of leaves.

L. Pundt, UConn
Scouting for slugs

• Slugs feed at night on a wide range of crops.
• Look for holes in leaves and stems, and shiny mucous-like slime trails.
• Inspect areas under containers, and damp areas in greenhouse.
Slugs

L. Pundt, UConn
Diseases
Scouting for damping off

• Common disease of germinating seeds and young seedlings.
• Seeds may fail to emerge (pre-emergence damping off).
• Young seedlings may wilt, water soaked stem lesion at soil line.
• Plants often die in a circular pattern.
Damping off

Fungus spreads radially from a central point of origin, resulting in a circular pattern.

L. Pundt, UConn
Damping off on basil due to \textit{Rhizoctonia}.
Scouting for Bacterial Leaf Spots

• Look for water-soaked brown or black spots on basil leaves.

• Spots are angular and surrounded by leaf veins.
Bacterial Leaf Spot on Basil

Note: Dark, brown, angular water-soaked lesions.
Bacterial Leaf Spot on Basil

Bacterial Leaf Spot on basil caused by *Pseudomonas*.
Scouting for Botrytis Blight

• Look for leaf blight, and gray fuzzy appearing spores on plant leaves during humid conditions.

• Tan stem cankers may develop on basil and rosemary.
Botrytis Stem Canker

Tan stem cankers with characteristic gray fuzzy appearing spores on basil.

L. Pundt, UConn
Botrytis stem canker on rosemary.
Scouting for Web Blight

• Stems and leaves collapse with fine web-like fungal threads present.
• Dense canopies and humid conditions favor web blight.
• Many herbs including basil, mint, parsley, rosemary, rue, sage and thyme susceptible.
Rhizoctonia Web Blight

Cottony, tan fungal threads may be seen.
Rhizoctonia

Diagnostic right angled branching of *Rhizoctonia* viewed under the microscope.
Scouting for Crown and Root Rots

- Leaves turn yellow, and wilt.
- Plants may be stunted.
- Inspect roots. They may be discolored, and turn brown or black.
- Laboratory analysis is needed to determine the causal agent.
Brown, discolored roots of this rosemary infected with *Phytophthora*. 
Crown and Root Rot

Note: Wilting, decline and plant death. Often on one side or stem of a plant.
Scouting for downy mildews

• Yellowing between the veins resembles a nutritional disorder.
• Look for purplish brown to grayish sporulation on the underside of leaves on susceptible basil varieties.
Downy Mildew on Basil

Yellowing between the veins, resembling a nutrient disorder.
Downy Mildew on Basil

Look on the underside of the leaves for the grayish sporulation.
Scouting for powdery mildew

• Look for faint, white fungal threads on mint, rosemary, sage...
• Look on older leaves, and both upper and lower leaf surfaces.
• Look for the fungal threads and chains of spores with a hand lens to distinguish from powdery-white spray residue.
Powdery Mildew on Rosemary

Look closely for the threadlike fungal strands to distinguish powdery mildew from whitish spray residues.
Scouting for Rusts

- Rusts are easy to identify by their reddish-brown spores found in masses.
- Some herbs susceptible to rusts include lemon grass, spearmint, peppermint, and French tarragon.
Rust on French Tarragon

Bright reddish-orange pustules on underside of leaves; characteristic of rust infection.
Scouting for Viruses

• Symptoms include mosaic patterns, leaf crinkle or distortion, chlorotic streaking, ringspots, unusual line patterns and stunting.

• Some viruses have a wide host range, some have a narrow host range.

• There is no cure.
Viruses

Ringspots and unusual line patterns may be symptoms of a virus infection.
Impatiens necrotic spot virus

Leaves are mottled ("green island effect") on basil.

L. Pundt. UConn
Agdia Immuno Strip Test

Control line = test working

Line = positive test

Tests can be completed in your office in as little as 20 minutes.

www.agdia.com
Leaf Scorch on Basil

Basil suffering from leaf scorch when grown in full sun.
Some Suggested References

• Pest Management for Herb Bedding Plants Grown in the Greenhouse

• http://ipm.uconn.edu/documents/view.php?id=344