

Tips on Scouting Herb Bedding Plants Pest and Disease ID

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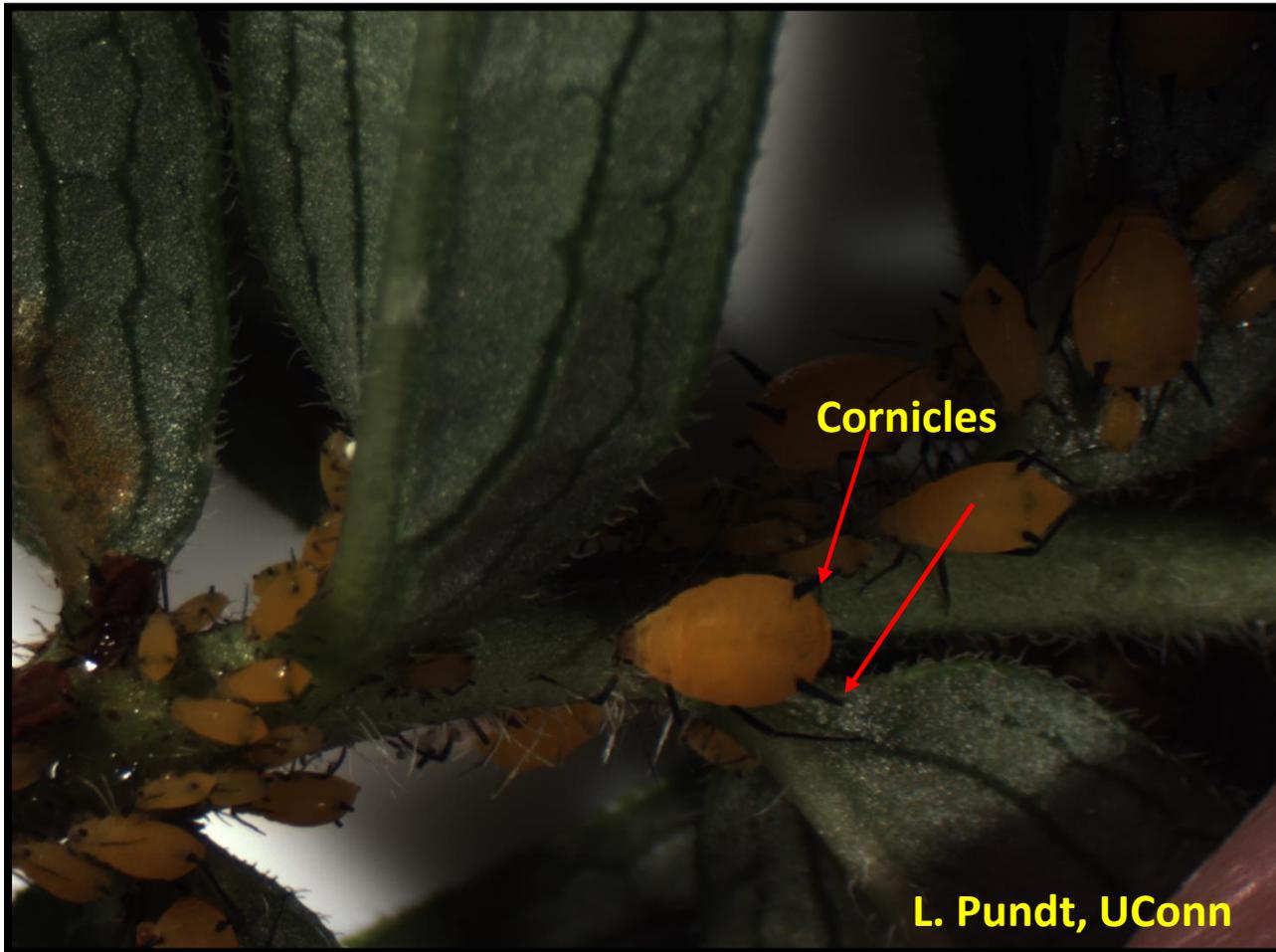
UConn Extension

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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



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Look for cornicles (“tailpipes”) at the end of the abdomen.

Aphids



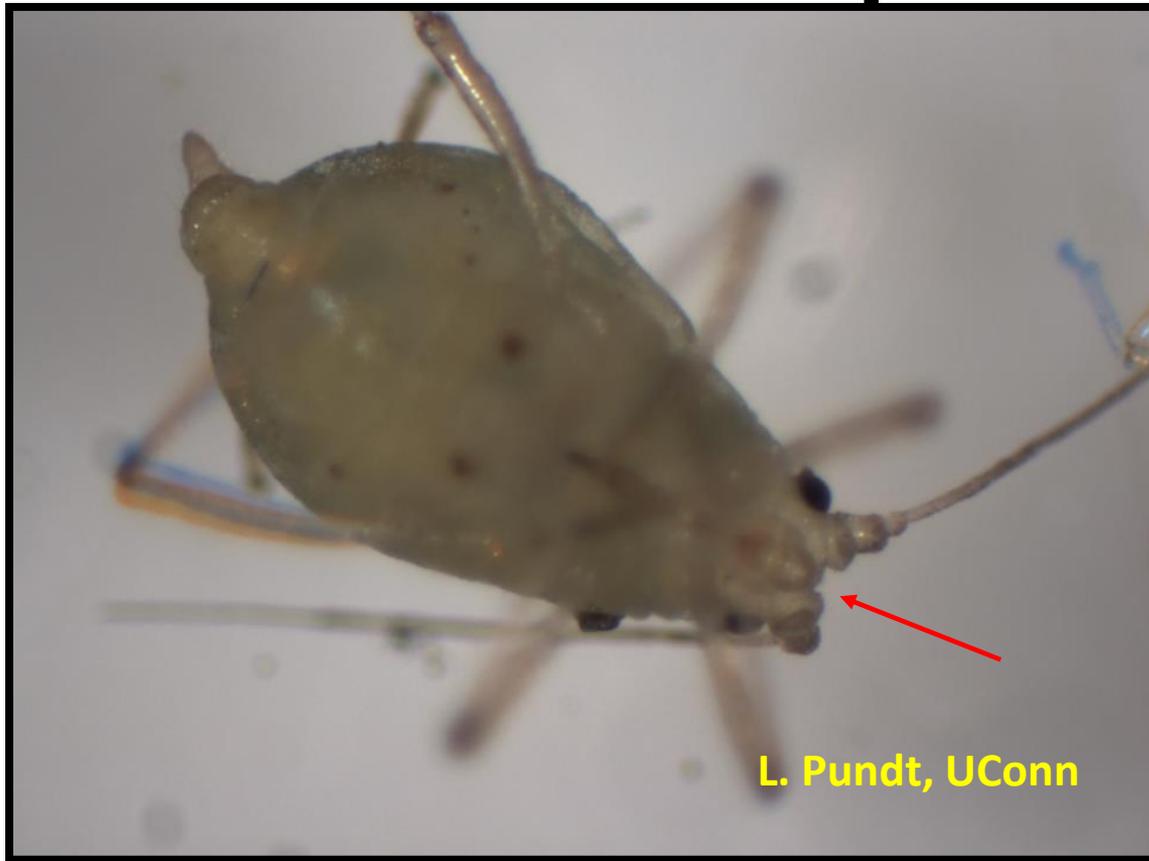
Aphids feeding on the underside of basil leaves.

Green Peach Aphids



Molting or cast skins of aphids on basil.

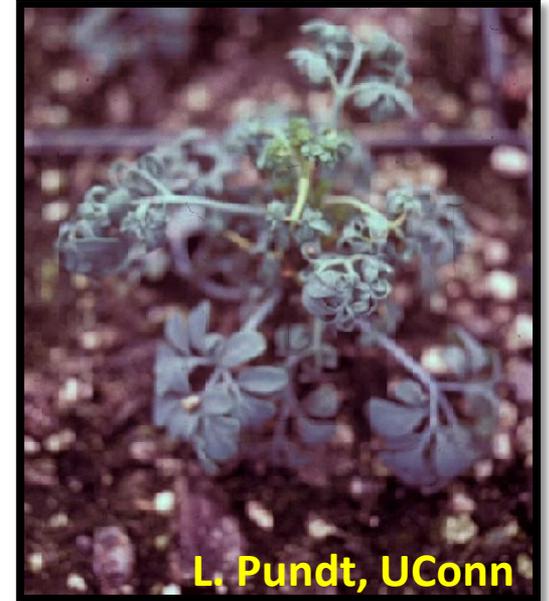
Green Peach Aphid



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Look for a pronounced indentation between the base of the antennae, with protusions that aim toward each other.

Foxglove Aphid Feeding Damage



Foxglove aphids may cause more leaf distortion than other aphid species.

Foxglove Aphid



D. Gilrein, Cornell

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

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.

Aphid Mummies



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

Aphid Mummies



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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

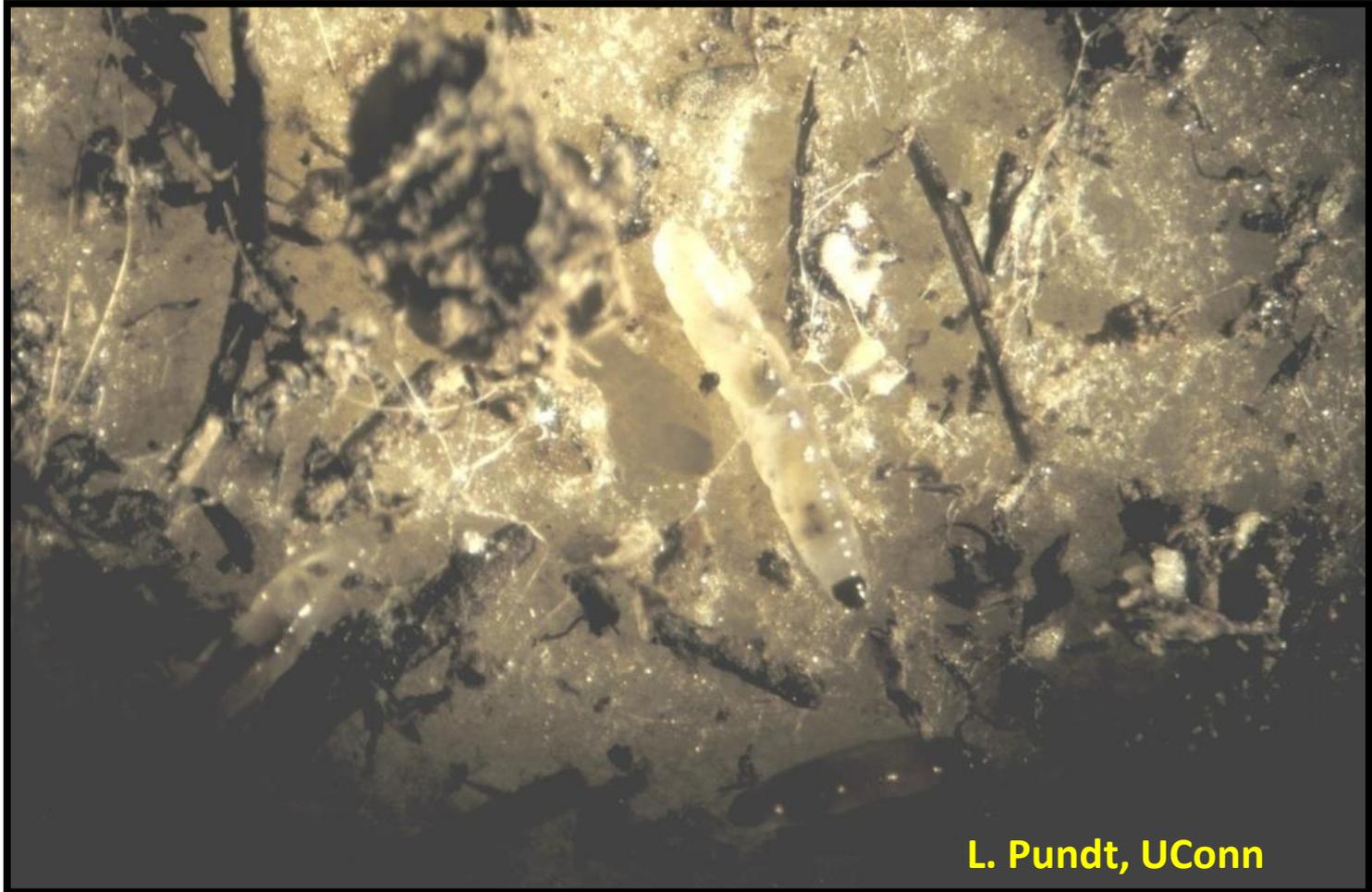
- **Use yellow sticky cards (horizontal placement is best) or vertical placement near growing media to attract winged adults**
- **Use potato chunks or slices to monitor for larvae. Check after two days.**
- **Look for larval feeding damage on young seedlings, in propagation houses.**
- **Fungus gnats have a wide host range, and are favored by moist habitats.**

Fungus Gnat Adult



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



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Shore fly adult



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

Shore Flies



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.

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.

Spider Mite Feeding Damage



Leaves may also turn yellow, resembling a nutritional disorder.

Spider Mites



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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.)

Spider Mites



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.

Four Lined Plant Bug



Four lined plant bug adult and feeding damage on mint.

Four Lined Plant Bug



Bright red, young nymph on mint leaves.

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 Mealybugs



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

Spittlebugs

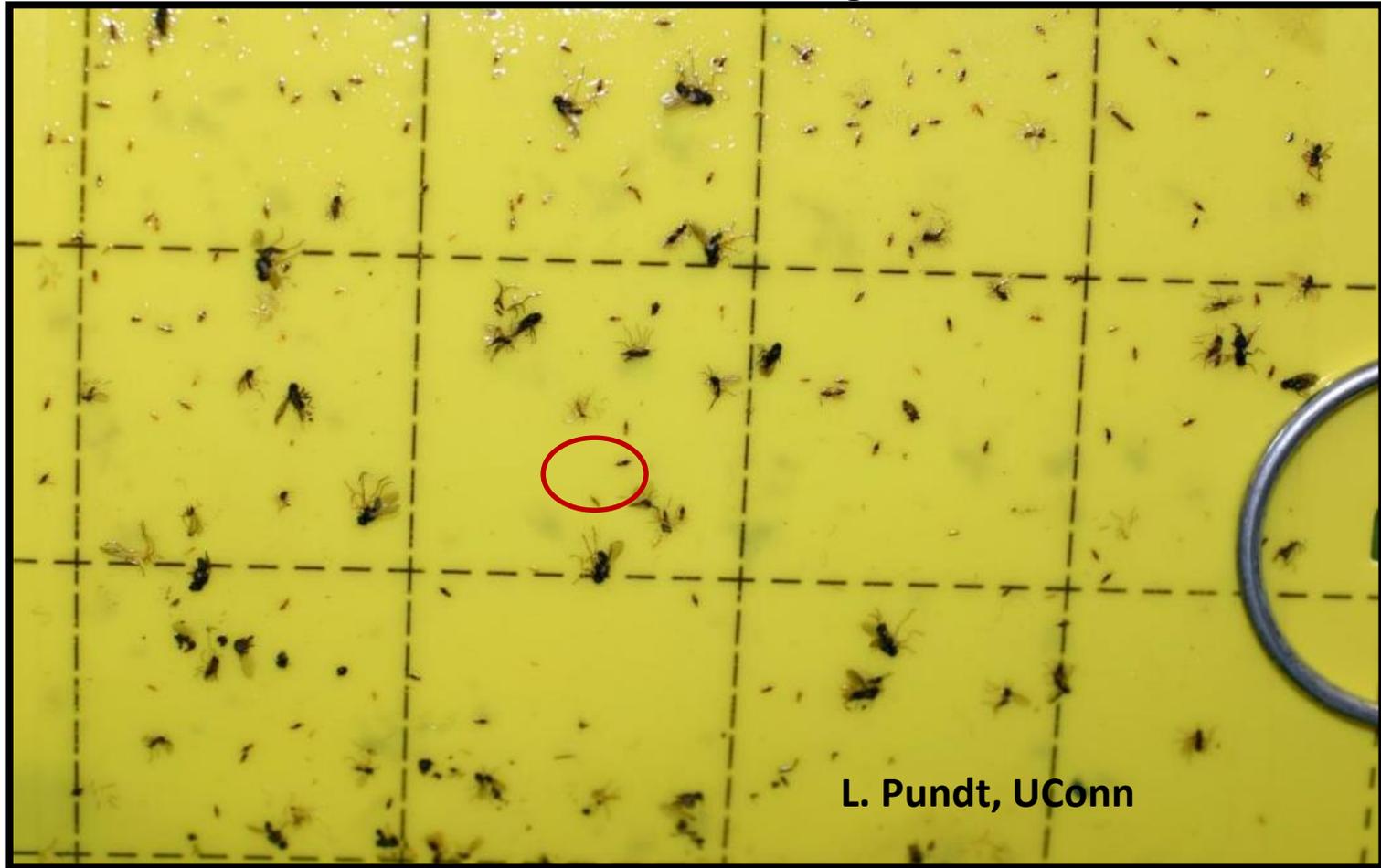


Frothy mass on stems is protecting the young spittlebug nymphs feeding on this tarragon.

Scouting for thrips

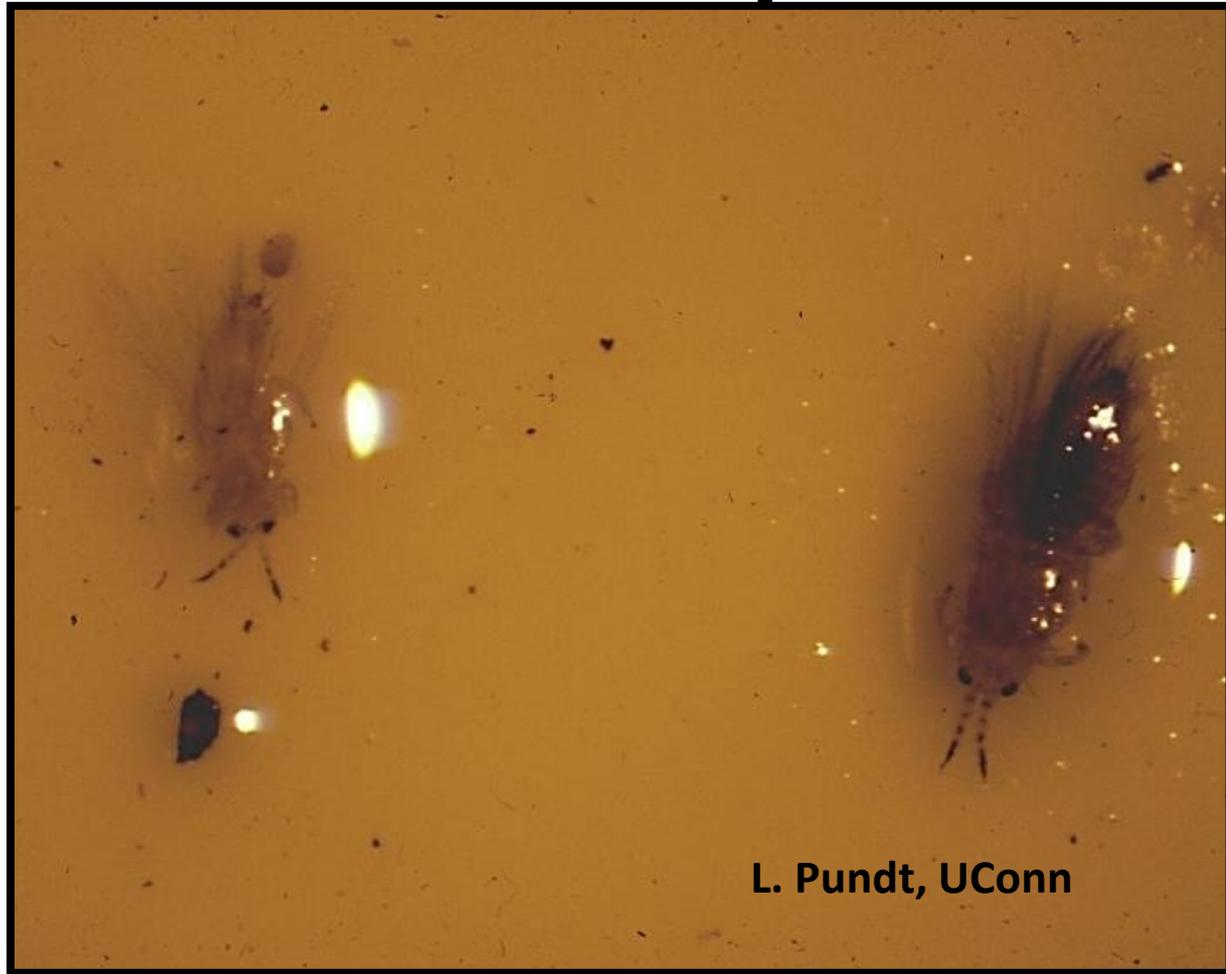
- **Yellow sticky cards are needed to detect early infestations.**
- **Wide host range.**
- **Look for thrips adults and larvae and their damage (white scarring, distorted growth, small fecal spots) especially on basil, French tarragon, lemon grass, mint, rosemary (flowers), sage, and thyme....**

Adult thrips



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

Adult thrips



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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.

Thrips feeding damage



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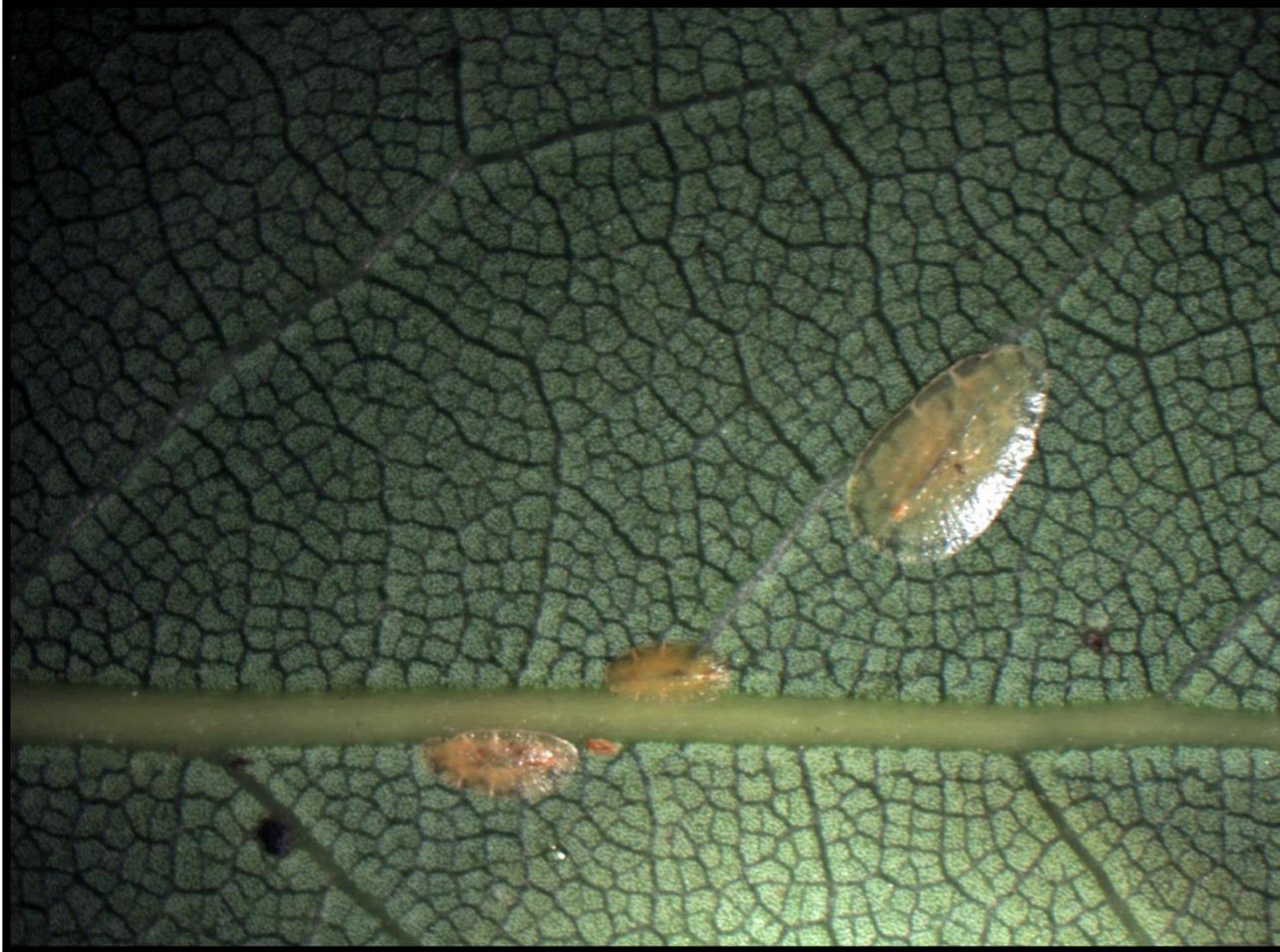
Leaves have a characteristic “silvery” appearance with leaf scarring on basil.

Brown Soft Scale



Brown, soft scale on bay.

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.

Greenhouse whitefly adults



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

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



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.

Damping off



Damping off on basil due to *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.

Botrytis Stem Canker



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



J. Allen, UConn

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.**

Crown and Root Rot



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



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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.

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>