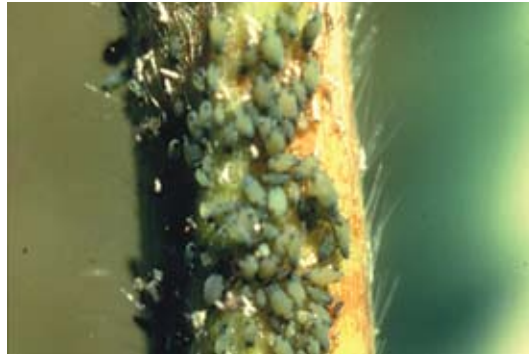




David N. Ferro, University of Massachusetts

I-1 Aphid, Cabbage, *Brevicoryne brassicae*. 1.6–2.6 mm



David N. Ferro, University of Massachusetts

I-2 Aphid, Corn Leaf, *Rhopalosiphum maidis*, on sweet corn tassel. 1.5–2.4 mm



David N. Ferro, University of Massachusetts

I-3 Aphid, Green Peach, *Myzus persicae*, winged adult female and nymphs on potato. 1.7–2 mm



Martin Spellman

I-4 Aphid, Melon, *Aphis gossypii*, nymphs. Note light brown cases of parasitized aphids, known as 'mummies.' 1–2 mm



Whitney Cranshaw, Colorado State University

I-5 Aphid, Pea, *Acyrtosiphon pisum*, 2.3–2.7 mm



David N. Ferro, University of Massachusetts

I-6 Aphid, Potato, *Macrosiphum euphorbiae*. 2.1–3.4 mm



David N. Ferro, University of Massachusetts

I-7 Asparagus Beetle, Common, *Crioceris duodecimpunctata*, adult. 5–6 mm



David N. Ferro, University of Massachusetts

I-8 Asparagus Beetle, Common, *Crioceris duodecimpunctata*, larvae, feeding on asparagus. 1.5–8 mm



David N. Ferro, University of Massachusetts

I-9 Asparagus Beetle, Spotted, *Creoceris duodecimpunctata*, adult. 6–7.5 mm



David N. Ferro, University of Massachusetts

I-10 Asparagus Miner, *Ophiomyia simplex*, adults on asparagus stem. 3–4 mm long



David N. Ferro, University of Massachusetts

I-11 Asparagus Miner, *Ophiomyia simplex*, larva and feeding damage on asparagus stem. 0.4–3.5 mm



David N. Ferro, University of Massachusetts

I-12 Asparagus Miner, *Ophiomyia simplex*, damage to roots and crown of asparagus.



Martin Spellman

I-13 Bean Leaf Beetle, *Cerotoma trifurcata*, adult. 3.5–5 mm



Thomas Kuhar, Virginia Tech

I-14 Beet Armyworm, *Spodoptera exigua*, damage on tomato.



Martin Spellman

I-15 Beet Armyworm, *Spodoptera exigua*, caterpillars. 2.5–22.3 mm



T. Jude Boucher, University of Connecticut

I-16 Cabbage Looper, *Trichoplusia ni*, caterpillar. 0.2 to 0.5 mm



David N. Ferro, University of Massachusetts

I-17 Cabbage Maggot, *Delia radicum*, adult fly. 5–7 mm



David N. Ferro, University of Massachusetts

I-18 Cabbage Maggot, *Delia radicum*, eggs, laid in soil at base of stem. 1.1 mm



David N. Ferro, University of Massachusetts

I-19 Cabbage Maggot, *Delia radicum*, maggots and pupae (brown) with damaged roots and stem. 1.5–8 mm



Ruth Hazzard, University of Massachusetts

I-22 Colorado Potato Beetle, *Leptinotarsa decemlineata*, adult. 9–14 mm



Ruth Hazzard, University of Massachusetts

I-25 Corn Earworm, *Helicoverpa zea*, caterpillar and ear damage. 1.5–24.8 mm



Carol Miles, Washington State University

I-20 Carrot Rust Fly, *Psila rosae*, maggot and damage. 6–9 mm



T. Jude Boucher, University of Connecticut

I-23 Colorado Potato Beetle, *Leptinotarsa decemlineata*, larvae (grubs) in the final instar. 1.5–15 mm



Alan Eaton, University of New Hampshire

I-26 Corn Earworm & Fall Armyworm, head capsules of fall armyworm (left and right) and corn earworm (center) caterpillars.



David N. Ferro, University of Massachusetts

I-21 Carrot Weevil, *Listronotus oregonensis*, adult. 3.5–7 mm



David N. Ferro, University of Massachusetts

I-24 Corn Earworm, *Helicoverpa zea*, adult moth. 32–45 mm



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I-27 Cabbageworm, Cross-striped, *Evergestis rimosalis*, caterpillar. Up to 15–17 mm



David N. Ferro, University of Massachusetts

I-28 Cucumber Beetle, Spotted, *Diabrotica undecimpunctata*, adult; also known as southern corn rootworm. 6–7.5 mm



David N. Ferro, University of Massachusetts

I-29 Cucumber Beetle, Striped, *Acalymma vittatum*, adult. 7 mm



Jim Dill, University of Maine

I-30 Cutworm, Black, *Agrotis ipsilon*, caterpillar. 3.5–50 mm



Alan Eaton, University of New Hampshire

I-31 Cutworm, caterpillar in the soil and damage to bean seedling.



R.J. Reynolds Tobacco Company, www.ipmimages.org

I-32 Cutworm, Variegated, *Peridroma saucia*, caterpillar. 2.0–46 mm



T. Jude Boucher, University of Connecticut

I-33 Diamondback Moth, *Plutella xylostella*, adult moth. 6 mm



T. Jude Boucher, University of Connecticut

I-34 Diamondback Moth, *Plutella xylostella*, caterpillar. 1.7–11.2 mm



Alan Eaton, University of New Hampshire

I-35 European Corn Borer, *Ostrinia nubilalis*, adult moth (female). Wingspan 20–26 mm (male), 25–34 mm (female)



Ruth Hazzard, University of Massachusetts

I-36 European Corn Borer, *Ostrinia nubilalis*, full-grown caterpillar on corn. 1.5–25.5 mm

Insects



T. Jude Boucher, University of Connecticut

I-37 European Corn Borer, *Ostrinia nubilalis*, caterpillar feeding inside pepper. 1.5–25.5 mm



David N. Ferro, University of Massachusetts

I-38 Fall Armyworm, *Spodoptera frugiperda*, adult. Wingspan 32–40 mm



Ruth Hazzard, University of Massachusetts

I-39 Fall Armyworm, *Spodoptera frugiperda*, caterpillar and ear damage. 1.7–34.2 mm



Jim Dill, University of Maine

I-40 Flea Beetle, Corn, *Chaetocnema pulicaria*, adult. 1.6–2.1 mm



Canyn Andersen, University of Massachusetts

I-41 Flea Beetle, Crucifer, *Phyllotreta cruciferae*, adult. 2.2 mm



T. Jude Boucher, University of Connecticut

I-42 Flea Beetle, Eggplant, *Epitrix fuscula*, adult. 2 mm



J. Ogradnick, Cornell University

I-43 Flea Beetle, Striped, *Phyllotreta striolata*, adult. 2–2.4 mm



Whitney Cranshaw, Colorado State University

I-44 Fungus Gnat, Darkwinged, *Bradysia* spp., adult. 2.5 mm



Whitney Cranshaw, Colorado State University

I-45 Fungus Gnat, Darkwinged, *Bradysia* spp., larval stage. Up to 5.5 mm



Thomas Kuhar, Virginia Tech

I-46 **Harlequin Bug**, *Murgantia histrionica*, adults, mating pair. 8–11.5 mm



Thomas Kuhar, Virginia Tech

I-47 **Harlequin Bug**, *Murgantia histrionica*, nymphs.



Ruth Hazzard, University of Massachusetts

I-48 **Hornworm**, Tomato, *Manduca quinquemaculata*, caterpillar, covered with eggs of Braconid wasp parasite. 6.7–81.3 mm



T. Jude Boucher, University of Connecticut

I-49 **Imported Cabbageworm**, *Pieris rapae*, adult butterfly. Wingspan 44 mm



Whitney Canshaw, Colorado State University

I-50 **Imported Cabbageworm**, *Pieris rapae*, egg on broccoli leaf. Eggs are laid singly on top or underside of leaves. 0.5–1 mm



David N. Ferro, University of Massachusetts

I-51 **Imported Cabbageworm**, *Pieris rapae*, partly grown and full grown caterpillars on cabbage. 3.2–30.1 mm



Jim Dill, University of Maine

I-52 **Japanese Beetle**, *Popillia japonica*, adult. 8–11 mm



David Cappaert, www.ipmimages.org

I-53 **Japanese beetle**, *Popillia japonica*, grub (left, 1.5 - 32 mm), compared to European chafer, *Rhizotrogus majalis* (center) and Junebug, *Phyllophaga* sp.(right).



Casey Hoy, Ohio State University

I-54 **Leafhopper**, Aster, *Macrosteles quadralineatis*, adult and nymphs. 3.5–3.8 mm (adult)



J. Ogradnick, Cornell University

I-55 Leafhopper, Potato, *Empoasca fabae*, adult. 3.5 mm



Alan Eaton, University of New Hampshire

I-56 Leafhopper, Potato, *Empoasca fabae*, symptoms of 'hopperburn' in potato.



Ruth Hazzard, University of Massachusetts

I-57 Leafminer, Beet, *Pegomya betae*, maggot exposed in feeding tunnel, on beet leaf. Up to 5–7 mm



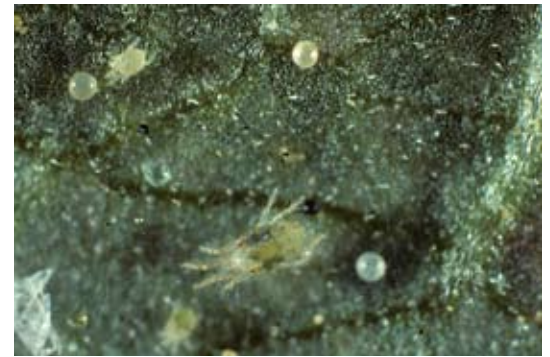
Whitney Cranshaw, Colorado State University

I-58 Leafminer, Vegetable, *Liriomyza sativae*, damage to bean leaves.



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I-59 Mexican Bean Beetle, *Epilachna varivestis*, adult, eggs, larva and pupa with feeding injury on bean. 6–8 mm (adult), 6–9.5 mm (larvae)



David N. Ferro, University of Massachusetts

I-60 Mite, Twospotted Spider, *Tetranychus urticae*, adult, egg, and nymph. 0.4–0.5 mm (adult)



T. Jude Boucher, University of Connecticut

I-61 Mite, Twospotted Spider, *Tetranychus urticaem*, feeding injury on eggplant.



Michael Hoffman, Cornell University

I-62 Northern Corn Rootworm, *Diabrotica barberi*, adult. 6 mm



David N. Ferro, University of Massachusetts

I-63 Onion Maggot, *Delia antiqua*, adult fly, pupae and larvae. 6 mm (adult), up to 10 mm (maggot)



Ruth Hazzard, University of Massachusetts

I-64 **Oriental Beetle**, *Exomala orientalis* adult. 9–10.3 mm



Becky Grube, University of New Hampshire

I-67 **Pepper Maggot**, *Zonosemata electa*, 'oviposition stings,' damage to fruit from egg laying by female maggot flies.



Thomas Kuhar, Virginia Tech

I-70 **Saltmarsh Caterpillar**, *Estigmene acrea*, caterpillar. 2–50 mm



T. Jude Boucher, University of Connecticut

I-65 **Pepper Maggot**, *Zonosemata electa*, adult fly. 6.5 mm (male), 7.5 mm (female)



Paul McLeod, University of Arkansas

I-68 **Pepper Weevil**, *Anthonomus eugeni*, adult. 2–3.5 mm



T. Jude Boucher, University of Connecticut

I-66 **Pepper Maggot**, *Zonosemata electa*, maggot feeding inside pepper fruit. Up to 10–12 mm



Paul McLeod, University of Arkansas

I-69 **Pepper Weevil**, *Anthonomus eugeni*, larva. 1.0–5 mm



Keith Weller, USDA Agricultural Research Service, www.ipmimages.org

I-71 **Sap Beetle, Dusky**, *Carpophilus lugubris*, adult. 3.5–4.5 mm



James Kalish, Department of Entomology, University of Nebraska-Lincoln

I-72 **Sap Beetle, Fourspotted**, *Glischrochilus quadrisignatus*, adult. Also known as picnic beetle. 5–6 mm



James Kalish, Department of Entomology,
University of Nebraska-Lincoln

I-73 **Sap Beetle, Fourspotted.** *Glischrochilus quadrisignatus*, larva. Feeds in corn kernels. Up to 5–6 mm



Martin Spellman

I-74 **Seedcorn Maggot,** *Delia platura*, maggot feeding inside seed. 5–8 mm



Martin Spellman

I-75 **Soybean Looper,** *Pseudoplusia includens*, caterpillar. up to 35 mm



Ruth Hazzard, University of Massachusetts

I-76 **Squash Bug,** *Anasa tristis*, adult. 16 mm



Ruth Hazzard, University of Massachusetts

I-77 **Squash Bug,** *Anasa tristis*, egg mass on pumpkin leaf. 1.1–1.5 mm



Ruth Hazzard, University of Massachusetts

I-78 **Squash Bug,** *Anasa tristis*, nymphs. 2.5–10 mm



Alan Eaton, University of New Hampshire

I-79 **Squash Vine Borer,** *Melittia cucurbitae*, adult moth. Wingspan 25–37 mm



T. Jude Boucher, University of Connecticut

I-80 **Squash Vine Borer,** *Melittia cucurbitae*, caterpillar and damage inside squash stem. Up to 25 mm



Martin Spellman

I-81 **Stalk Borer, Common,** *Papaipema nebris*, caterpillar. Up to 27 mm



Ruth Hazzard, University of Massachusetts

I-82 **Stink Bug**, *Euschistus* spp., feeding injury on tomato fruit.



Kathy Kamminga, Virginia Tech

I-83 **Stink Bug, Brown**, *Euschistus servus*, adult. 10–15 mm



Martin Spellman

I-84 **Stink Bug, Green**, *Acrosternum hilare*, adult. 15 mm



Julie Kikkert, Cornell University

I-85 **Swede Midge**, *Contarinia nasturtii*, damage.



Rebecca Hallett, University of Guelph, Canada

I-86 **Swede Midge**, *Contarinia nasturtii*, larvae and damage. 0.3–3.4 mm



Louis Tedders, USDA Agricultural Research Service, www.ipmimages.org

I-87 **Tarnished Plant Bug**, *Lygus lineolaris*, adult. 4.9–5.95 mm



Scott Bauer, USDA-ARS

I-88 **Tarnished Plant Bug**, *Lygus lineolaris*, nymph. 1– 4.5 mm



J. Ogradnick, Cornell University

I-89 **Thrips, Onion**, *Thrips tabaci*, adult. 1–1.2 mm



Ruth Hazzard, University of Massachusetts

I-90 **Thrips, Onion**, *Thrips tabaci*, damage on collard leaf



Ruth Hazzard, University of Massachusetts

I-91 **Onion Thrips**, *Thrips tabaci*, damage on onion.



John Sanderson, Cornell University

I-92 **Thrips, Western Flower**, *Frankliniella occidentalis*, on yellow sticky card with fungus gnat and a dime. 1.2–1.9 mm (adult)



John Sanderson, Cornell University

I-93 **Thrips, Western Flower**, *Frankliniella occidentalis*, close-up of thrips larvae. <1 mm



Thomas Kuhar, Virginia Tech

I-94 **Tomato Fruitworm**, *Helicoverpa zea* caterpillar and damage on tomato. Same as corn earworm. 1.5–24.8 mm



Alton Sparks, University of Georgia

I-95 **Tomato Pinworm**, *Keiferia lycopersicella*, caterpillar. 0.7–8 mm



Martin Spellman

I-96 **True Armyworm**, *Pseudaletia unipunctata*, caterpillars. Also called Common Armyworm or simply, Armyworm. Up to 35 mm



Martin Spellman

I-97 **Webworm, Garden**, *Achyra rantalis*, caterpillar. 2.1–20 mm long



Martin Spellman

I-98 **Webworm, Hawaiian Beet**, *Spoladea recurvalis*, caterpillar, (left) along with garden webworm. Up to 25 mm



Martin Spellman

I-99 **Western Corn Rootworm**, *Diabrotica vergifera*, adult. 6 mm



David N. Ferro, University of Massachusetts

I-100 Whitefly, Greenhouse, *Trialeurodes vaporariorum*, adult and nymphs. 1–2 mm (adult), 0.3–0.75 mm (nymphs)



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I-103 Insidious Flower Bug, *Orius insidiosus*, feeding on aphid. Common in corn. 3 mm



Martin Spellman

I-106 Ladybeetle, Twelve Spotted, *Coleomegilla maculata*, adult feeding on eggs of Colorado potato beetle. 4.5x5.5 mm (length by width)



David N. Ferro, University of Massachusetts

I-101 Wireworm, *Melanotus* spp, adult, also known as 'click beetle.' 7–11 mm



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I-104 Ladybeetle, larva feeding on aphids. Up to 5–6 mm



Martin Spellman

I-107 Spined Soldier Bug, *Podisus maculiventris*, adult. Preys on larvae, including Colorado potato beetle. 8.5–13 mm



Martin Spellman

I-102 Wireworm, *Melanotus* spp., larva. 1.5–19 mm



ipmimages.org

I-105 Ladybeetle, Multicolored Asian, *Harmonia axyridis*, adult beetles showing range of variation in markings. 6 mm



Martin Spellman

I-108 Syrphid Fly larva. Aphid predator; immature of Hover Fly 1–13 mm