



The Backyard Garden Bean Pests

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INSECTS AND OTHER PESTS

Thrips

SEVERITY: high

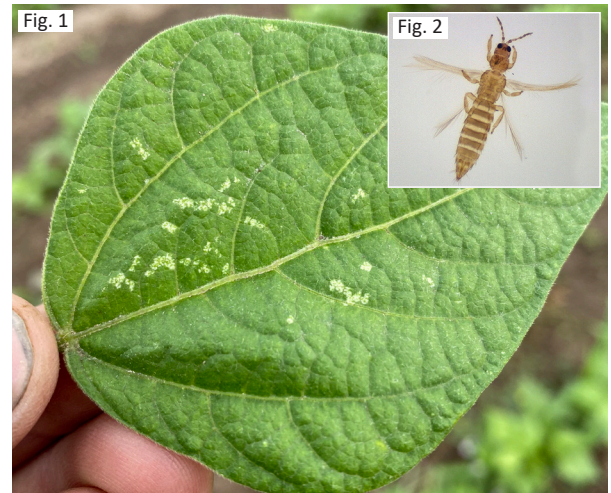
OTHER HOSTS: most vegetables, fruit, and weed species

GENERAL INFO: Both onion thrips (*Thrips tabaci*) and western flower thrips (*Frankliniella occidentalis*) are predominant in Utah. Adults are minute with elongated yellow-brown bodies and two pairs of fringed (hairy) wings (Fig. 2). Wingless larvae (nymphs) resemble adults and are a creamy yellow color. Thrips are common in hot, arid conditions and feed with a punch-and-suck behavior on foliage and bean pods.

SYMPTOMS:

- Stippling (small, pale spots) (Fig. 1).
- Discolored flecking/"bleaching" of foliage and pods.
- Silvering of leaf surface.
- Black dots of shiny excrement.

MANAGEMENT: Regularly monitor for thrips signs and symptoms and inspect the underside of foliage with a 10x hand lens. Use overhead irrigation to dislodge thrips from plants. Remove nearby weeds that may serve as an alternate host. For chemical control, insecticidal soap, oil, or a product containing spinosad are most effective.



Spider Mites

SEVERITY: high

OTHER HOSTS: most fruits and vegetables, woody and perennial ornamentals, and weeds

GENERAL INFO: Spider mites are very small but can be seen with a 10x hand lens. Adults have eight legs and a round oval body. They are yellow-orange in color and turn darker in fall. Spider mites feed with piercing-sucking mouthparts and produce webbing on host plants. They thrive in high heat and drought conditions.

SIGNS/SYMPTOMS:

- Stippling (tiny flecks of lost chlorophyll), bronzing, and scorching of foliage and pods (Fig. 3).
- Mild leaf drop.
- Webbing when populations are high.
- Reduced crop yield/quality.

MANAGEMENT: Encourage natural predators such as predatory mites and thrips, lady beetles, and minute pirate bugs. Provide adequate watering. A very strong stream of water can spray mites off of plants. There are no miticides for backyard gardens, but insecticidal soap or oil can be effective. Remove and compost heavily infested plants.



Cutworms and Armyworms

SEVERITY: moderate

OTHER HOSTS: most vegetables, weeds, and fruits

GENERAL INFO: There are several species of cutworms and armyworms present in Utah. Notable ones that may attack beans include the black cutworm (*Agrotis ipsilon*), western bean cutworm (*Loxagrotis albicosta*), fall armyworm (*Spodoptera frugiperda*), and western yellow striped armyworm (*S. praefica*). Adult moths are mottled gray and brown with light-colored markings. Larvae vary from tan, green, or almost black and curl into a c-shape when disturbed. Armyworms are typically a concern from mid-July through September and have one to three generations per growing season. Cutworms overwinter as larvae in the soil underneath plant debris and become active during the spring and early summer months. They characteristically clip off seedlings at the soil line. The adults of both species lay eggs on leaves, and larvae feed on foliage and pods (Fig. 4), later pupating in the soil. Infestations are sporadic.

SIGNS/SYMPTOMS:

- Clipped off seedlings.
- Irregular holes in foliage or pods.
- Skeletonized or shredded foliage.
- Complete defoliation.

MANAGEMENT: Monitor plants early in the season; look for wilting or holes in foliage. Protect vulnerable transplants with cardboard collars. Remove cool-season weeds near garden sites that can serve as alternate hosts. In the fall, till or turn the soil to disrupt the overwintering larval stage. Organic insecticides with the active ingredients *Bacillus thuringiensis* or spinosad are effective on young larvae.



Mexican Bean Beetle

SEVERITY: low

OTHER HOSTS: most legumes

GENERAL INFO: Adult Mexican bean beetles (*Epilachna varivestis*) are about 1/3 inch long, and orange to bronze-colored with 16 black spots (Fig. 6). They lay small yellow eggs in clusters on the underside of the leaves. Larvae are yellow, with dark/black bristles covering their bodies (Fig. 5). The pupal stage is brightly yellow-colored, and attaches underneath the leaves. The life cycle can be completed in as little as 30 days in the summer months. Adults are strong flyers.

SIGNS/SYMPTOMS:

- Irregular holes in leaves.
- Lace-like damage on leaves.
- Skeletonization/defoliation.
- Leaf curling.
- Reduced crop quality/yield.

MANAGEMENT: Scout for signs of adults, larvae, egg clusters, and feeding damage on the undersides of leaves after planting. A few bean varieties have some resistance against Mexican bean beetle feeding. Plant trap crops earlier to attract overwintered adults rather than them finding the main crops first. If populations are low, beans can tolerate feeding damage, but under higher populations, consider insecticide options such as carbaryl, esfenvalerate, and malathion. After harvest, ensure adequate sanitation to prevent overwintering sites.



Seedcorn Maggot

SEVERITY: low

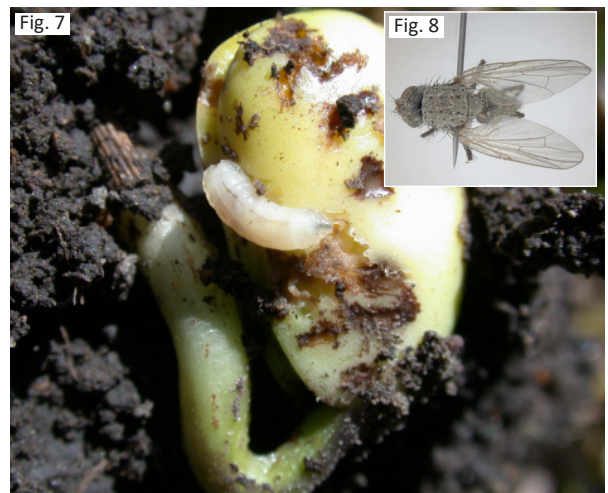
OTHER HOSTS: corn and other large-seeded crops

GENERAL INFO: The adult seedcorn maggot (*Delia platura*) is a fly, about 1/5 inch long with gray-brown bodies (Fig. 8). The larvae (maggots) have white-yellow cylindrical bodies. The pupation stage occurs through the winter in the soil. Adults emerge in spring and lays eggs just below the soil surface. Upon hatching, larvae feed on roots or germinating seeds.

SIGNS/SYMPTOMS:

- Poor germination.
- Damaged cotyledons (Fig. 7).
- Damaged roots.
- Damping-Off (induced fungal infection).
- Reduced crop quality and yield.

MANAGEMENT: Monitor for signs and symptoms early in the season, especially after planting. Handle bean seeds carefully; damaging the seed coat provides an entry point for maggots and other pests and pathogens. Remove all plant debris and residues from the previous growing season to reduce non-decomposed organic matter within the soil. Prevent over-irrigating, as the maggots thrive in moisture. Traps and lures may be used to monitor adults and reduce their population. Rotate crops to a non-legume. Pretreated seeds can protect seedlings against maggots.



DISEASES

Bean Common Mosaic Virus

SEVERITY: high

OTHER HOSTS: legume crops

GENERAL INFO: Bean common mosaic virus is a disease with worldwide distribution. It is mainly spread in seeds but is also transmitted by aphids, leafhoppers, whiteflies, and thrips as well as via infected pollen. The severity of symptoms is dependent on the virus strain, bean variety infected, and infected plant's age.

SIGNS/SYMPTOMS:

- Light and dark green mottled leaves (Fig. 9).
- Distorted, downward curled or rolled leaves.
- Yellow pinpoint dots or lesions.
- Stunted plant growth.
- Reduced crop quality or yield.

MANAGEMENT: Plant certified disease-free seeds or varieties resistant to viruses. Manage aphid populations on bean plants. Remove plants with symptoms.



Damping-Off

SEVERITY: high

OTHER HOSTS: all plants at seedling stage

GENERAL INFO: Damping-Off is caused by several soilborne fungi and fungal relatives, including *Pythium*, *Rhizoctonia*, *Fusarium*, and *Phytophthora* species. The pathogens infect and kill the roots and crown of germinating and established seedlings. They can survive in plant debris in greenhouses, reused seed trays, benches, and outdoor soils. Outbreaks of damping-off can occur when seedlings are kept overly wet. In wet conditions, damping-off pathogens produce spores that migrate to neighboring seed trays through openings in the tray bottom. Once symptoms are visible on seedlings in a tray, neighboring seedlings are likely infected as well.

SIGNS/SYMPTOMS:

- Seedlings shrivel and collapse at the stem (Fig. 10).
- Failed germination.

MANAGEMENT: Sterilize pots and trays by soaking in a 10%–15% bleach solution or a product containing quaternary ammonium compounds. Disinfect greenhouse benches and plant tools.



Beet Curly Top Virus

SEVERITY: high

OTHER HOSTS: beet, cucurbits, pepper, potato, tomato, spinach, Swiss chard, kochia, lambsquarters, mustards, and pigweed

GENERAL INFO: Beet curly top virus is vectored by the beet leafhopper (*Circulifer tenellus*), which overwinters in the southwest and migrates north each season. Beet leafhoppers acquire the virus when feeding on infected weeds or other plants and transmit it when feeding on healthy plants. The virus overwinters in the beet leafhoppers and in living host plants. Symptom severity varies depending on plant genetics and age, and outbreaks vary from year to year.

SYMPTOMS:

- Stunted growth.
- Leaves begin to yellow and become thick, brittle, and dark green (Fig. 11).
- Poor pod development.
- Flower drop and early senescence.

MANAGEMENT: There are no chemical control options for curly top, and insecticide applications directed at beet leafhoppers are ineffective. Remove infected plants immediately upon detection. The most successful control measure is to exclude leafhoppers with floating row covers. Alternating vegetable rows with varying heights and types of crops can help confuse leafhoppers from finding hosts.



Common Bacterial Blight

SEVERITY: low

OTHER HOSTS: none

GENERAL INFO: Common bacterial blight (*Xanthomonas axonopodis* pv. *phaseoli*) affects most dry bean plant parts, including foliage, stems, pods, and seeds. Optimum conditions for disease spread include warm temperatures and humid weather. The bacteria can be splashed by rain or irrigation water onto susceptible bean plants as well as being spread by soil, humans, and insects.

SIGNS/SYMPTOMS:

- Small, water-soaked spots on leaves that turn brown with a distinctive yellow halo (Fig. 12).
- Red lesions on pods.
- Yellow/orange discoloration under seed coat.
- Leaf drop.
- Stem girdling.
- Reduced crop quality and yield.



MANAGEMENT: Plant certified disease-free seed. Since the bacteria can survive on the leaves of non-host plants or volunteer beans, practice good weed control.

Halo Blight

SEVERITY: low

OTHER HOSTS: none

GENERAL INFO: Halo blight is caused by *Pseudomonas syringae* pv. *phaseolicola* and affects many bean types and snap beans. This pathogen overwinters within contaminated seed and leftover plant debris. In spring, splashing rain, irrigation water, or soil blown by wind can spread the bacteria to susceptible host plants. The bacteria enter the plant through natural openings like stomates or through wounds and colonize the plant. The disease is most severe during cool, wet conditions.

SYMPTOMS:

- Small, water-soaked lesions on the underside of leaves that turn brown with a yellow halo (Fig. 13).
- Rust-colored and water-soaked lesions on bean pods.
- Reduced yield or complete crop loss.

MANAGEMENT: Plant disease-free seed. Practice good weed management. Copper-based bactericides can be applied in the late vegetative or early flowering stage.



REFERENCES & FURTHER READING

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IMAGE CREDITS

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