South Dakota State University Extension

An identification guide for

Alfalfa Insect Pests

in South Dakota

Department of **Agronomy, Horticulture and Plant Science**
College of **Agriculture, Food and Environmental Sciences**

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Authors

Adam Varenhorst, Assistant Professor & SDSU Extension Field Crop Entomologist
Adam.Varenhorst@sdstate.edu
605-688-6854

Phillip Rozeboom, SDSU Extension IPM Coordinator
Philip.Rozeboom@sdstate.edu

Shelby Pritchard, SDSU Extension IPM Specialist
Shelby.Pritchard@sdstate.edu

Erica Anderson, former SDSU Graduate Research Assistant

Patrick Wagner, SDSU Extension Entomology Field Specialist
Patrick.Wagner@sdstate.edu

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How to scout for insects

The insects listed in this guide can be pests of alfalfa in South Dakota. The best approach for preventing these pests from reaching economically damaging populations involves routinely scouting fields.

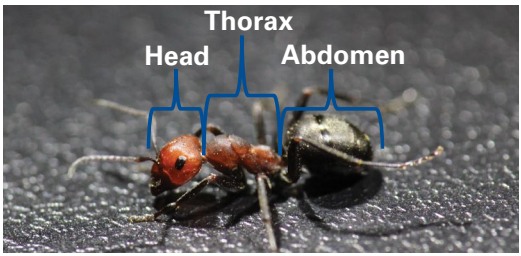
Most insects can be scouted for by using visual observations. This includes checking plants on the surface for insect presence or signs of damage (i.e., defoliation). Aboveground pests can also be scouted for by using a sweep net.

How to scout with a sweep net:

- Use a 15-inch diameter sweep net with a sturdy handle made of aluminum or wood
- When recommendations call for a number of sweeps, they are referring to pendulum sweeps. One pendulum sweep consists of swinging the net from one side of the body to the other and back again.
- To get accurate population estimates from sweep nets, it is important to walk at a steady pace and swing the net hard enough to dislodge any insects that may be present on the plants. However, the force used to swing the net should not uproot plants with each swing.

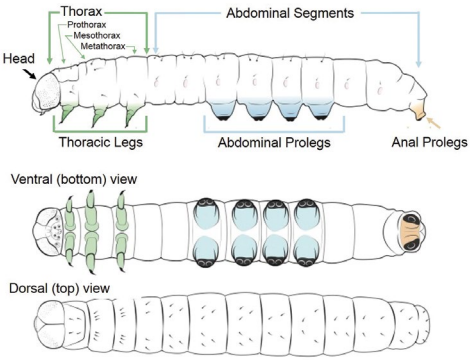
How to identify insects

Adult insects have three distinguishing features to look for: six legs, two pairs of wings, and three body segments (head, thorax and abdomen). These features are found on all insects even though they can sometimes be modified and appear different or be missing completely. Beetles also have two pair of wings, except the forewings are modified into hard shells/covers called elytra.



How to identify caterpillars

Caterpillars are the larval (immature) form of butterflies and moths. There are several characteristics used to identify caterpillar species, including color, pattern, number of abdominal prolegs, and the presence of elongated hairs and/or tubercles (spots). Of these characteristics, the number of abdominal prolegs is often the most important.



Alfalfa Weevils

(Coleoptera: Curculionidae)

Larvae Identification

- Light to dark green body
- Pronounced longitudinal white stripe down middle of back
- Lesser white stripes on each side of body
- Black head
- Vary in size based on life stage (1/20-3/8 inch)

Adult Identification

- Brown-gray beetle with dark brown-black band in center of the body
- Approximately 1/4 inch long
- Have elongated snout
- Clubbed antennae originate from snout

Alfalfa Weevils

(Coleoptera: Curculionidae)

Crop Damage

- After hatch larvae feed within stems
- Larvae then feed on leaf buds
- Eventually larvae feed on leaves and terminal growth
- Adults consume leaf tissue and may debark stems prior to leaf regrowth

Scouting Tips

- Use a sweep net to determine the presence of larvae in a field
- If present, determine total larvae per 30 stems by beating pulled plants into a five-gallon bucket
- Monitor fields for ragged leaves or white-gray hue

Cultural Controls

- Early cutting can kill young larvae (less than ¼ inch long)
- Early cutting with mature larvae can reduce feeding but hay must be removed from the field as fast as possible and stubble should be sprayed

Economic Thresholds

- Varies based on price and growth stage
- Approximately:
  - Average of 20 larvae per 10 sweeps
  - Average of 3 larvae per 30 stems

Notes

- One generation per year
- Most feeding occurs before the first cutting
- Adults emerge with 60°F average
- Heavy feeding will stunt future cuttings
- Eastern and Western populations found throughout South Dakota

Clover Leaf Weevils

(Coleoptera: Curculionidae)

Larvae Identification

- Light green body
- Pronounced longitudinal white stripe down middle of back
- Later larval stages have a pink hue associated with white line
- Light brown head capsule
- Vary in size based on developmental stage (last larval stage is ½ inch long)

Adult Identification

- Brown-gray beetle with numerous black lines on body that are separated by lighter brown lines
- Approximately 3/8 inch long
- Have elongated snout with clubbed antennae

Clover Leaf Weevils

(Coleoptera: Curculionidae)

Crop Damage

- Larvae feed on lower leaves of plant
- Larvae must be present in high populations to cause noticeable damage
- Adults feed for a short period and become inactive for the summer

Scouting Tips

- Use a sweep net to determine the presence of larvae in a field
- If present, scout the crowns of 20 plants and count the larvae

Cultural Controls

- Early cutting can kill young larvae

Economic Thresholds

- Average of five larvae per crown

Notes

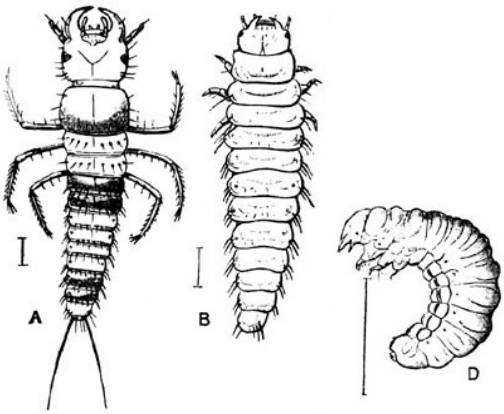
- One generation per year
- Most feeding occurs before the first cutting
- Nocturnal feeders
- Populations are normally managed by naturally occurring entomopathogenic fungi and parasitoid wasps

Blister Beetles

(Coleoptera: Meloidae)

Larvae Identification

- Triungulin stage: first form after hatching. Active belowground and search for prey (A)
- Caraboid stage: second form, reduced size of mouthparts and legs (B)
- Scarabaeidoid stage: third and final form before pupa (D)
- Vary in size based on life stage (1/20-3/8 inch) and also based on species
- Larvae feed on grasshopper eggs so areas with previously high grasshopper populations may have increased blister beetle populations during the following year



Blister Beetles

(Coleoptera: Meloidae)

Striped Blister Beetle

(Epicauta vittata)

Adult Identification

- Elongate beetle covered in short hairs
- Elytra cover the abdomen but are separated at the tips
- Black and yellow-orange colored body
- Darker orange head
- Elytra with 2-3 black stripes
- Thorax with 2 black stripes
- Head with two triangular markings
- Vary in size from 2/5 to 2/3 inch long

Blister Beetles

(Coleoptera: Meloidae)

Margined Blister Beetle

(Epicauta funebris)

Adult Identification

- Three color forms: cinereous, margined, black
- Cinereous: ashgray coloration on body
- Margined: black with white margins on elytra and thorax
- Black: body color black
- Elongate beetle covered in short hairs
- Elytra cover the abdomen but are separated at the tips
- Black and white head
- Vary in size from 2/5 to 2/3 inch long

Blister Beetles

(Coleoptera: Meloidae)

Ashgray Blister Beetle

(Epicauta fabricii)

Adult Identification

- Elongate beetle covered in short hairs
- Elytra cover the abdomen but are separated at the tips
- Black and light gray colored body
- Vary in size from 2/5 to 2/3 inch long

Blister Beetles

(Coleoptera: Meloidae)

Immaculate Blister Beetle

(Epicauta immaculata)

Adult Identification

- Elongate beetle covered in short hairs
- Elytra cover the abdomen but are separated at the tips
- Entire body will be either an orange or gray color
- Vary in size from 1/2 to 1 inch long

Blister Beetles

(Coleoptera: Meloidae)

Black Blister Beetle

(Epicauta pensylvanica)

Adult Identification

- Elongate beetle covered in short hairs
- Elytra cover the abdomen but are separated at the tips
- Entirely black body
- Vary in size from 2/5 to 2/3 inch long

Blister Beetles

(Coleoptera: Meloidae)

Crop Damage

- Feed on leaves and blossoms
- Large populations can cause noticeable defoliation mid-season
- Blood contains chemical cantharidin, which is toxic to livestock, especially horses
- Once hay is contaminated the cantharidin does not lose toxicity (does not break down over time or when heated)

Scouting Tips

- Adults may be present throughout the season but are more common in second and later cuttings
- Populations may be increased in areas of grass or bare soil
- Do not crush or handle to avoid blisters
- Scout immediately prior to cutting as beetles are very mobile

Cultural Controls

- Adults are attracted to blooming alfalfa. Reduce infestations by cutting alfalfa prior to peak bloom.
- Monitor fields prior to cutting and use windrower to reduce crushed adults
- Do not feed hay from field edges to horses

Economic Thresholds

- Use of insecticides does not remove the beetles from the hay and may increase the number of beetles per bale

Notes

- One generation per year
- Adults are attracted to flowering plants

Blister Beetles

(Coleoptera: Meloidae)

Estimated Lethal Concentrations

- 1 mg/2.2 pounds (for horse)
- Adult beetles range from less than 1 mg/adult to more than 5 mg/adult
- Striped blister beetles and ashgray blister beetles have highest cantharidin concentrations in blood

Cantharidin Poisoning Symptoms

- Secondary infections and bleeding
- Instant death

Cantharidin Blistering

- Coming into contact with blister beetles may cause blistering on skin
- Typically, blisters do not require medical attention and will go away naturally
- Blisters may occur from simply brushing against adults. Crushing adults is not recommended

Aphids

(Hemiptera: Aphididae)

Pea Aphids

(Acyrthosiphon pisum)

Nymph and Adult Identification

- Light green/yellow to dark green color
- Pale pink colored adults also possible
- Red eyes
- Long cornicles with dark tips
- Third antennal segment has dark band on tip
- Vary in size based on developmental stage (⅛ to ¼ inch long)

Winged Adult Identification

- Same as wingless nymphs and adults but with the presence of clear wings
- Wings held over body like tent

Aphids

(Hemiptera: Aphididae)

Pea Aphids

(Acyrthosiphon pisum)

Crop Injury

- Nymphs and adults feed on plants
- Large populations can stunt plants and cause them to have a golden color

Scouting Tips

- Use a sweep net to determine the presence of pea aphids in a field
- If present, conduct 30 sweeps from multiple locations within a field or look at 30 stems and count total number of aphids

Cultural Controls

- Alfalfa can tolerate low populations, which can increase natural enemy populations
- Cut hay before pea aphid populations exceed thresholds and monitor stand regrowth for infestation

Economic Thresholds

Average # of Pea Aphids		
Growth Stage	**Per 30 Sweeps**	**Per 30 Stems**
Seedling	NA	5
Less than 10” Tall	300	40
More than 10” Tall	400	75

Notes

- Multiple generations per year
- Population growth greatest when temperatures are between 60-70°F with limited precipitation

Aphids

(Hemiptera: Aphididae)

Spotted Alfalfa Aphids

(Therioaphis maculata)

Nymph and Adult Identification

- Light tan-yellow color
- Six rows of dark spots along the body
- Later larval stages have a pink hue associated with white line
- Light brown head capsule
- Adults 1/16 to ⅛ inch long
- Antennae darker towards tip

Winged Adult Identification

- Light tan-yellow color
- Dark spots along body
- Wings will have very pronounced dark veins present on them

Aphids

(Hemiptera: Aphididae)

Spotted Alfalfa Aphids

(Therioaphis maculata)

Crop Injury

- Nymphs and adults feed on lower portions of alfalfa plant canopy
- Feeding causes a toxic reaction in plant: chlorosis and leaves will fall off
- Large populations kill plants

Scouting Tips

- Watch for vein banding in newly formed leaves as this is a symptom of infestation
- Aphids will jump or fall from stems

Cultural Controls

- Resistant varieties

Economic Thresholds

Average # of Spotted Alfalfa Aphids		
Growth Stage	**Per 30 Sweeps**	**Per 30 Stems**
Seedling	NA	1
Less than 10” Tall	75	10
More than 10” Tall	160	30

Notes

- Multiple generations per year
- Prefer warmer season (80+°F)
- Resistant varieties are essential to establish a stand during dry years if spotted alfalfa aphids are present

Aphids

(Hemiptera: Aphididae)

Blue Alfalfa Aphids

(Acyrthosiphon kondoi)

Nymph and Adult Identification

- Very similar to pea aphid
- Less than ¼ inch long
- Blue-green colored body
- Third antennal segment is completely brown
- Antennae may also be completely dark

Winged Adult Identification

- Wings with dark veins

Aphids

(Hemiptera: Aphididae)

Blue Alfalfa Aphids

(Acyrthosiphon kondoi)

Crop Injury

- Nymphs and adults feed on alfalfa
- Large populations will stunt plants (shorter internodes and smaller leaves)
- Leaf curling and drop on infested plants

Scouting Tips

- Generally, cluster on new leaves
- Heavy infestations will cover entire plants

Cultural Controls

- Spot treat fields, most of the time large populations are localized

Economic Thresholds

Average # of Blue Alfalfa Aphids		
Growth Stage	**Per 30 Sweeps**	**Per 30 Stems**
Seedling	NA	1
Less than 10” Tall	75	10
More than 10” Tall	160	30

Notes

- Populations decline when temperatures exceed 90°F

Aphids

(Hemiptera: Aphididae)

Cowpea Aphids

(Aphis craccivora)

Nymph and Adult Identification

- Adults are shiny black
- Nymphs are dull dark gray
- Base of antennae is white but darkens at tip
- Legs are white with dark tips (feet)
- Cornicles are black
- Adults less than 1/8 inch in length

Winged Adult Identification

- Shiny with clear wings

Aphids

(Hemiptera: Aphididae)

Cowpea Aphids

(Aphis craccivora)

Crop Injury

- Nymphs and adults feed on plants
- Inject toxin into plant that causes stunting or may kill plants during high populations
- Large populations also produce honeydew and subsequent black sooty mold growth

Scouting Tips

- Scout edge of field to start
- Examine stems first then leaves

Cultural Controls

- Leave border of field during bad infestations to encourage natural enemy populations

Economic Thresholds

Average # of Cowpea Aphids		
Growth Stage	**Per 30 Sweeps**	**Per 30 Stems**
Seedling	NA	5
Less than 10” Tall	300	40
More than 10” Tall	400	75

Notes

- Multiple generations per year
- Can be a season long issue but populations are not typically an issue in South Dakota

Potato Leafhoppers

(Hemiptera: Cicadellidae)

Nymph Identification

- Pale green body
- Bullet-shaped
- Wings not fully developed
- Size variable depending on developmental stage (less than 1/8 inch long)

Adult Identification

- Pale green body
- Bullet-shaped
- Several white spots on top of head and thorax
- Transparent wings held like tent over body
- Approximately 1/8 inch long

Potato Leafhoppers

(Hemiptera: Cicadellidae)

Crop Damage

- Nymphs and adults feed on plants using piercing-sucking mouthparts
- They will repeatedly probe which results in cell damage and injected saliva that reduces photosynthate movement
- Severe feeding will discolor leaves, stunt plants, and reduce protein content

Scouting Tips

- Begin scouting after the first cutting
- Check fields for leaf tips turning yellow, referred to as hopperburn
- Use a sweep net to monitor populations

Cultural Controls

- Harvest alfalfa fields in the bud stage

Economic Thresholds

- Dynamic threshold based on market value of alfalfa, growth stage and insecticide cost
- Visit extension.sdstate.edu for thresholds

Notes

- Potato leafhoppers migrate north from the Southern U.S. each spring
- Hopperburn is often mistaken for drought stress

Lygus Bugs

(Neuroptera: Myrmeleontidae)

Nymph Identification

- Light green body
- Later instars with 5 black spots on the back
- Wings not fully developed
- Size ranges from 1/16 to 5/32 inch long depending on developmental stage

Adult Identification

- Green to brown in color
- White triangular mark on the back
- End of bodies bent downward
- Approximately ¼ inch long

Lygus Bugs

(Neuroptera: Myrmeleontidae)

Crop Damage

- Nymphs and adults feed on growing points, buds, and flowers
- Toxic saliva is injected into plants when bugs are feeding
- Severe feeding can result in stunted plants

Scouting Tips

- Use a sweep net to monitor populations
- Begin scouting in May and June

Cultural Controls

- Harvesting fields before adults become present can result in high nymph mortality

Economic Thresholds

- 40 bugs per 10 sweeps (nymphs and adults)

Notes

- Overwinter as adults
- 2 to 3 generations per year
- Adults emerging in the spring initially feed on weeds such as thistle, sweet clover, and wild mustard before moving into alfalfa fields

Alfalfa Plant Bugs

(Hemiptera: Miridae)

Nymph Identification

- Bright green body with black spots on legs
- Red eyes
- Wings not fully developed
- Multiple instars vary in size (less than ⅜ inch long)

Adult Identification

- Pale green to brown in color
- Black spots on legs
- Dark brown ends on the forewings
- Approximately ⅜ inch long

Alfalfa Plant Bugs

(Hemiptera: Miridae)

Crop Damage

- Nymphs and adults feed on the leaves, buds, and flowers
- Injury can lead to stunting and reduced forage quality

Scouting Tips

- Use a sweep net to determine the presence of alfalfa plant bugs
- Begin scouting in May and June

Cultural Controls

- Reduce weedy vegetation near alfalfa fields
- Cutting before adults are present can result in high nymph mortality

Economic Thresholds

- 20-30 bugs per 10 pendulum sweeps (includes nymphs and adults)

Notes

- Overwinter as eggs
- 1-2 generations per year
- Also called Lucerne bugs

Meadow Spittlebugs

(Hemiptera: Aphrophoridae)

Nymph Identification

- Nymphs are wingless
- Light in color
- Almost always present within spittle mass
- May be around near edge of the spittle

Adult Identification

- Can vary greatly in color and pattern
- Approximately ¼ inch long
- Wings held like tent over body
- Broad triangular head
- Large eyes (frog like appearance)

Meadow Spittlebugs

(Hemiptera: Aphrophoridae)

Crop Injury

- Nymphs feed on alfalfa
- Early season concern
- Large populations can stunt alfalfa stands
- Adults feed for a short period and become inactive for the summer

Scouting Tips

- Worst populations are normally in first year alfalfa in fields following small grains
- Walk the field in an M shaped pattern and look for spittle on plants in 10 one square foot locations
- Dissect spittle and count nymphs per area

Cultural Controls

- Avoid planting alfalfa into small grain stubble

Economic Thresholds

- Average of 20-50 nymphs per square foot
- Threshold is dependent on value of crop

Notes

- Nymphs produce frothy liquid to cover themselves, resembles spittle
- One generation per year

Alfalfa Blotch Leafminer

(Diptera: Agromyzidae)
(Agromyza frontella)

Larvae Identification

- Are present under the leaf epidermis
- Feed on chlorophyll and leave white lines

Adult Identification

- Black in color
- Two wings
- Approximately ⅛ inch long
- Humped back (thorax)

Alfalfa Blotch Leafminer

(Diptera: Agromyzidae)
(Agromyza frontella)

Crop Damage

- Adult females puncture leaves to feed on plant sap and leave pinholes
- Larvae feed within leaves for 6-17 days
- Create “mines” that are comma shaped white lines as they feed on chlorophyll
- Adult and larvae may reduce yields by 7-20% and protein content by 10-20%
- Wounds increase the potential for diseases

Scouting Tips

- Examine the underside of individual leaflets of a trifoliate for pinhole feeding scars by holding leaves up to the sun

Cultural Controls

- Early cutting of first crop and immediate removal may reduce infestations

Economic Thresholds

- Average of 250 pinholes per trifoliate
- 30-40% of leaflets examined having pinholes
- Foliar insecticides must target adult populations
- Signs of larval mining indicate the it is too late to spray to reduce that generation

Notes

- 2-4 generations per year

Army Cutworms

(Lepidoptera: Noctuidae)
(Euxoa auxiliaris)

Caterpillar Identification

- 4 pairs of abdominal prolegs
- Dark brown in color with three, light brown strips running length of body
- Light brown head

Moth Identification

- Usually tan with light and dark brown markings
- Presence of two, light colored spots on hindwings

Army Cutworms

(Lepidoptera: Noctuidae)
(Euxoa auxiliaris)

Crop Damage

- Most common in June and July
- Usually feed on leaves
- May devour entire plant if food is limited

Scouting Tips

- Monitor new growth for signs of defoliation
- Any delay in green-up may be indication of army cutworm presence
- If army cutworms are present in field:
  - Determine population density by digging several, square foot areas and counting cutworm larva found

Cultural Controls

- Tillage, flood irrigation and weed control all reduce army cutworm populations
- Use in-furrow insecticide if planting into previously infested fields

Economic Thresholds

- For newly established alfalfa stands:
  - Two caterpillars per square foot
- For established alfalfa stands:
  - Four or more caterpillars per square foot

Management

- Managed by labeled insecticides
- Apply treatment in late afternoon or evening

Notes

- Female moths lay 1,000 to 3,000 eggs directly on bare soil in late September and October
- Army cutworms overwinter in soil as larva

Variegated Cutworms

(Lepidoptera: Noctuidae)
(Peridroma saucia)

Caterpillar Identification

- 4 pairs of abdominal prolegs
- Range from pale grey to dull brown in color
- Distinct, yellow spots down middle of back
- Orange head capsule with black “W” marking
- Can grow to two inches in length

Moth Identification

- Forewings are brown to reddish brown with mottled designs throughout
- Wingspan of up to 1 ½ inches

Variegated Cutworms

(Lepidoptera: Noctuidae)
(Peridroma saucia)

Crop Damage

- Most common in June and July
- Usually feed on new leaves
- Rarely cut young plants near soil surface

Scouting Tips

- If taking soil surface samples, take a one square foot sample every five acres for fields up to 30 acres
  - Add another sample site for each additional ten acres for fields larger than 30 acres
- If using a sweep net, take at least ten sweep samples from different locations in field
  - Sample during early morning

Cultural Controls

- Weed control important to keep variegated cutworm populations down
- Use an in-furrow insecticide if planting into a previously infested field

Economic Thresholds

- Apply treatment if more than two cutworms per square foot are present or if you average two to three larvae per sweep

Management

- Can be managed by labeled insecticides
- Apply treatment in late afternoon or evening
- Management not recommended on larvae over 1 ½ inches long

Notes

- Cutworms are nocturnal feeders and hide under the soil during the day
- Larvae overwinter in the soil

Dingy Cutworms

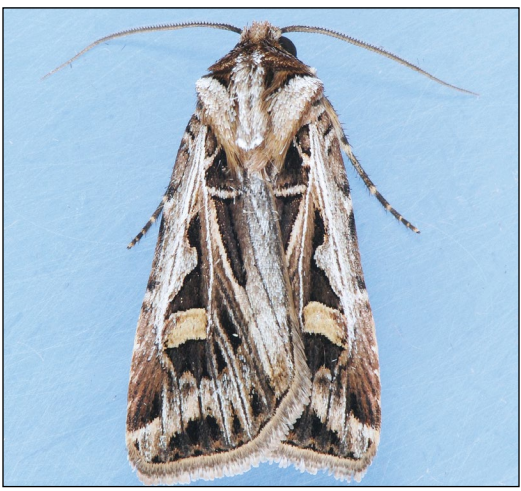
(Lepidoptera: Noctuidae)
(Feltia jaculifera)

Caterpillar Identification

- 4 pairs of abdominal prolegs
- Light gray with smooth skin
- Tubercle pairs on each segment are nearly identical in size

Moth Identification

- Usually light brown with dark brown markings
- Appearance of well-defined geometric shapes of dark brown and tan
- Light-colored fringe borders the bottom of the wings



Dingy Cutworms

(Lepidoptera: Noctuidae)
(Feltia jaculifera)

Crop Damage

- Most common in June and July
- Primarily feed on leaves
- Rarely cut young plants near soil surface

Scouting Tips

- Examine 50 plants per field
  - Areas with high moisture and weeds should be monitored closely
  - Look for plants with cutting or leaf feeding
- If dingy cutworms are present in field:
  - Determine population density by digging several, square foot areas and counting cutworm larva found

Cultural Controls

- Weed control important to keep dingy cutworm populations down
- Consider using an in-furrow insecticide to reduce risk of cutworm feeding next growing season in previously infested fields

Economic Thresholds

- For newly established alfalfa stands:
  - Two caterpillars per square foot
- For established alfalfa stands:
  - Four or more caterpillars per square foot

Management

- Can be managed by labeled insecticides
- Apply treatment in late afternoon or evening

Notes

- Cutworms are nocturnal feeders and hide under the soil during the day
- One generation per year

Alfalfa Caterpillars

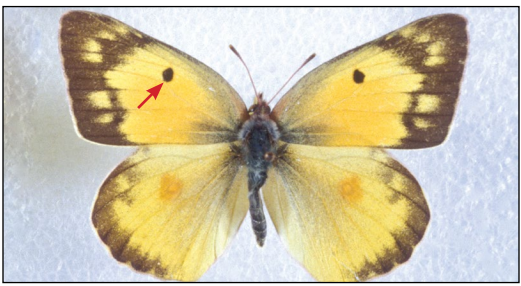
(Lepidoptera: Pieridae)
(Colias eurytheme)

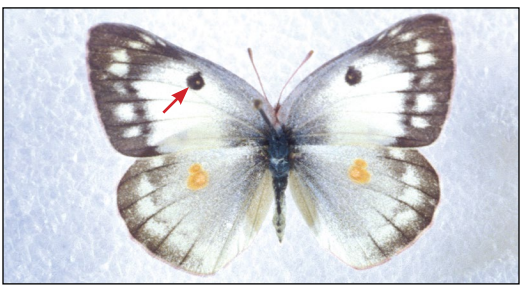
Caterpillar Identification

- 4 pairs of abdominal prolegs
- Light to dark green with fuzzy appearance due to hairs
- Distinct white stripe on each side of the body

Butterfly Identification

- Either white or yellow but other markings are the same
- On each forewing, one central black spot along with thick black margins filled with either white or yellow spots





Alfalfa Caterpillars

(Lepidoptera: Pieridae)
(Colias eurytheme)

Crop Injury

- Occasional pest
- Feeding results in irregular holes and/or entire removal of leaves

Scouting Tips

- Injury from this pest is usually not enough to warrant management action
- Take at least 10 sweep samples from different locations in field

Cultural Controls

- Use border-strip harvesting to preserve natural enemies like parasitoids
  - Parasitized caterpillars appear swollen at rear, somewhat shinny instead of velvety, and lighter in color
- Early harvesting may severely diminish alfalfa caterpillar populations

Economic Thresholds

- Thresholds include army cutworms
- Apply treatment at:
  - 10 or more non-parasitized alfalfa caterpillars per sweep
  - 15 or more non-parasitized army cutworms per sweep, or
  - 10 or more non-parasitized alfalfa caterpillars and army cutworms combined per sweep

Management

- Parasitoids usually keep pest populations below thresholds, but foliar insecticides are labeled for alfalfa caterpillars

Notes

- More common in hot, dry weather

Green Cloverworms

(Lepidoptera: Erebidae)
(Hypena scabra)

Caterpillar Identification

- 3 pairs of abdominal prolegs
- Initially pale yellow but eventually turn light green with a white stripe on each side of the body

Moth Identification

- Dark brown or black with spotted or mottled wings
- Wingspan usually around 1 ¼ inches

Green Cloverworms

(Lepidoptera: Erebidae)
(Hypena scabra)

Crop Injury

- Most common in July and August
- Early instar feeding strips the bottom side of leaves
- Later instar feeding removes all leaf tissue except major veins
  - Gives plants a hail-damaged appearance

Scouting Tips

- Early season feeding can cause severe defoliation
- Late season injury from this pest is not enough to warrant management action
- Consider the feeding injury of this pest together with other defoliating pests

Cultural Controls

- Keep alternative food sources low by removing weeds from ditch banks and fence rows

Economic Thresholds

- No thresholds developed but consider the green cloverworm along with other defoliating pest when making management decisions

Management

- Insecticide treatment is not usually needed as this pest is highly susceptible to disease and parasites
  - Parasitized caterpillars appear mottled brown and slightly shrunken

Notes

- Two or more generations per year

Common Stalkborer

(Lepidoptera: Noctuidae)
(Papaipema nebris)

Caterpillar Identification

- 4 pairs of abdominal prolegs
- Caterpillars have distinct purple saddle that fades with age
- Orange head with black stripe on each side

Moth Identification

- Grayish-brown moth with wingspan of 1 to 1 ¼ inches
- Forewings have a distinct set of aligned white or silver spots
- Hindwings are a lighter gray color

Common Stalkborer

(Lepidoptera: Noctuidae)
(Papaipema nebris)

Crop Injury

- Most common in May and June
- Damage will be small, visible holes in the alfalfa leaves
- Larvae may burrow into stem leaving plant wilted or deformed
- Damage most commonly found near field margins

Scouting Tips

- Examine 30 plants for injury, adjacent to grassy weed areas

Cultural Controls

- Keep grassy weeds to a minimum:
  - Mow or burn surrounding grassy weeds in mid-August to prevent egg laying and early Spring to prevent egg hatching
- Planting early may lessen severity of any damage

Economic Threshold

- When 3% of scouted plants are infested

Management

- If common stalkborer damage is noticed, it is already too late to save an infested plant
- Use a foliar insecticide labeled for the pest if economic threshold is reached
- If there is an infestation history, applying insecticide during egg hatching may be beneficial

Notes

- Common stalkborer moths lay eggs in the Fall on grassy weeds
- Eggs hatch in very early Spring
- One generation per year

Grasshoppers

(Orthoptera: Acrididae)

Nymph Identification

- Size varies by life stage and species
- Nymphs will go through 4-6 instars
- Color will vary by life stage and species
- Wing pads present that will increase in size through development
- Nymph identification to species is often difficult if not impossible for some species

Grasshoppers

(Orthoptera: Acrididae)

Redlegged Grasshopper

(Melanoplus femurrubrum)

Adult Identification

- Medium body size
- Black and yellow-orange body coloration
- Black stripe down entire hind femur
- Red hind tibia, rarely blue
- Partial black band on thorax
- Vary in size from approximately ⅔ to 1 inch long
- Rare individuals of the species will have a yellow and blue body coloration

Grasshoppers

(Orthoptera: Acrididae)

Differential Grasshopper

(Melanoplus differentialis)

Adult Identification

- Large body size
- Green to olive to yellow body coloration
- Black chevrons on hind femur
- Hind tibia light green to gray color
- Vary in size from approximately 1 ⅛ to 1 ½ inches long
- Rare individuals of the species will have a black (melanistic) body coloration

Grasshoppers

(Orthoptera: Acrididae)

Two-Striped Grasshopper

(Melanoplus bivittatus)

Adult Identification

- Large body size
- Brown to tan body coloration
- Two yellow stripes that run from the head to the tips of the wings, forming a triangle
- Black stripe down entire hind femur
- Blue to gray hind tibia
- Vary in size from approximately 1 to 1 ½ inches long

Grasshoppers

(Orthoptera: Acrididae)

Migratory Grasshopper

(Melanoplus sanguinipes)

Adult Identification

- Medium body size
- Black and yellow-orange body coloration
- Black stripe down entire hind femur
- Blue green or red hind tibia
- Partial black band on thorax
- Vary in size from approximately ¾ to 1 ⅛ inches long

Grasshoppers

(Orthoptera: Acrididae)

Dawson Grasshopper

(Melanoplus dawsoni)

Adult Identification

- Small body size with short wings
- Black and yellow body coloration
- Broken black stripe down entire hind femur
- Red hind tibia
- Partial black band on thorax
- Vary in size from approximately ½ to ⅞ inch long
- Rare individuals of the species will have wings extend beyond the tip of the abdomen

Grasshoppers

(Orthoptera: Acrididae)

Packard Grasshopper

(Melanoplus packardii)

Adult Identification

- Large body size
- Brown, tan and yellow body coloration
- Two light tan stripes run down top of head and pronotum
- Red or blue hind tibia
- Wings extend beyond the tip of the abdomen
- Vary in size from approximately 1 to 1 ½ inches long

Grasshoppers

(Orthoptera: Acrididae)

Gladstons' Spurthroat Grasshopper

(Melanoplus gladstoni)

Adult Identification

- Moderately large body size
- Dark brown and ivory body coloration
- Broken black stripe down entire hind femur
- Red hind tibia, rarely blue (southern species)
- Wings extend beyond the tip of the abdomen
- Vary in size from ¾ to 1 inch long

Grasshoppers

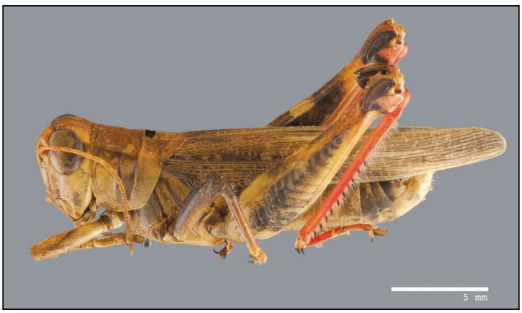
(Orthoptera: Acrididae)

Keeler Grasshopper

(Melanoplus keeleri)

Adult Identification

- Medium body size
- Colorful brown and yellow body coloration
- Black stripe down hind femur, narrow at base
- Red hind tibia
- Wings extend beyond the tip of the abdomen
- Vary in size from approximately ¾ to ⅞ inch long



Grasshoppers

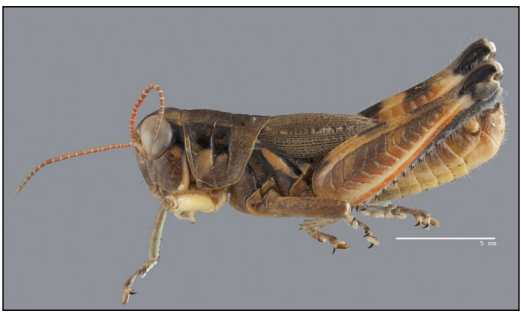
(Orthoptera: Acrididae)

Lakin Grasshopper

(Melanoplus lakinus)

Adult Identification

- Medium body size with short wings
- Brown and yellow body coloration
- Tan hind femur with three dark dorsal markings and orange to red stripe on bottom
- Blue hind tibia
- Partial black band on thorax
- Vary in size from approximately ⅔ to ⅞ inch long
- Rare individuals of the species will have wings extend beyond the tip of the abdomen



Grasshoppers

(Orthoptera: Acrididae)

Striped Sand Grasshopper

(Melanoplus foedus)

Adult Identification

- Large body size
- Brown and yellow to pale tan body coloration
- Broad brown band runs down top of head and center of pronotum with pale yellow stripe on either side
- Light to dark red hind tibia
- Wings extend beyond the tip of the abdomen
- Vary in size from approximately 1 to 1 ½ inches long

Grasshoppers
(Orthoptera: Acrididae)

Orangelegged Grasshopper
(Spharagemon equale)

Adult Identification
- Large body size
- Tan with brown bands and spots body coloration
- Outer face of hind femur with 2-3 stripes and inner face is orange
- Orange hind tibia
- Wings extend beyond the tip of the abdomen
- Hind wings pale yellow with dark band in center and clear tips
- Vary in size from approximately ⅞ to 1 ⅓ inches long

Grasshoppers

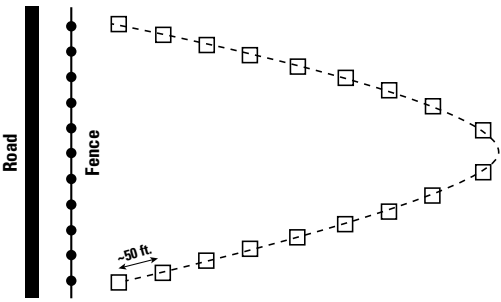
(Orthoptera: Acrididae)

Crop Damage

- Nymphs and adults feed on leaves
- Large populations of grasshoppers can result in complete defoliation

Scouting Tips

- Walk in a U-pattern to include edge and center of the field for evaluation. Stop at multiple locations along the pattern and scout for grasshoppers



- At each stop point, stand and count the moving grasshoppers in approximately a one square yard area
- Use a 15-inch diameter sweep net and collect 30 pendulum sweeps for each leg of the U-pattern

Cultural Controls

- When harvesting alfalfa leave several strips across the field uncut
- Allow grasshoppers to congregate into the strips and then treat with insecticides
- If field is close to harvest, remove alfalfa and then treat remaining stubble with insecticides to avoid pre-harvest interval and reduce feeding on regrowth

Grasshoppers

(Orthoptera: Acrididae)

Economic Thresholds

- 8-10 adult grasshoppers per square yard within the field
- 576-720 adults per 30 sweeps
- 15-20 nymph grasshoppers per square yard within the field

Notes

- Young stands less than 6 inches in height and post-cutting regrowth may require preventative management
- Cause more issues during dry seasons
- Warm fall conditions and late frost may result in increased grasshopper populations during the following year
- Increased spring rainfall may have negative impact on populations