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Insect Pest Management in California Pitahaya Production

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Pitahaya has little pest problems compared to other major economic crops*…but are not pest free*

Reported Pest

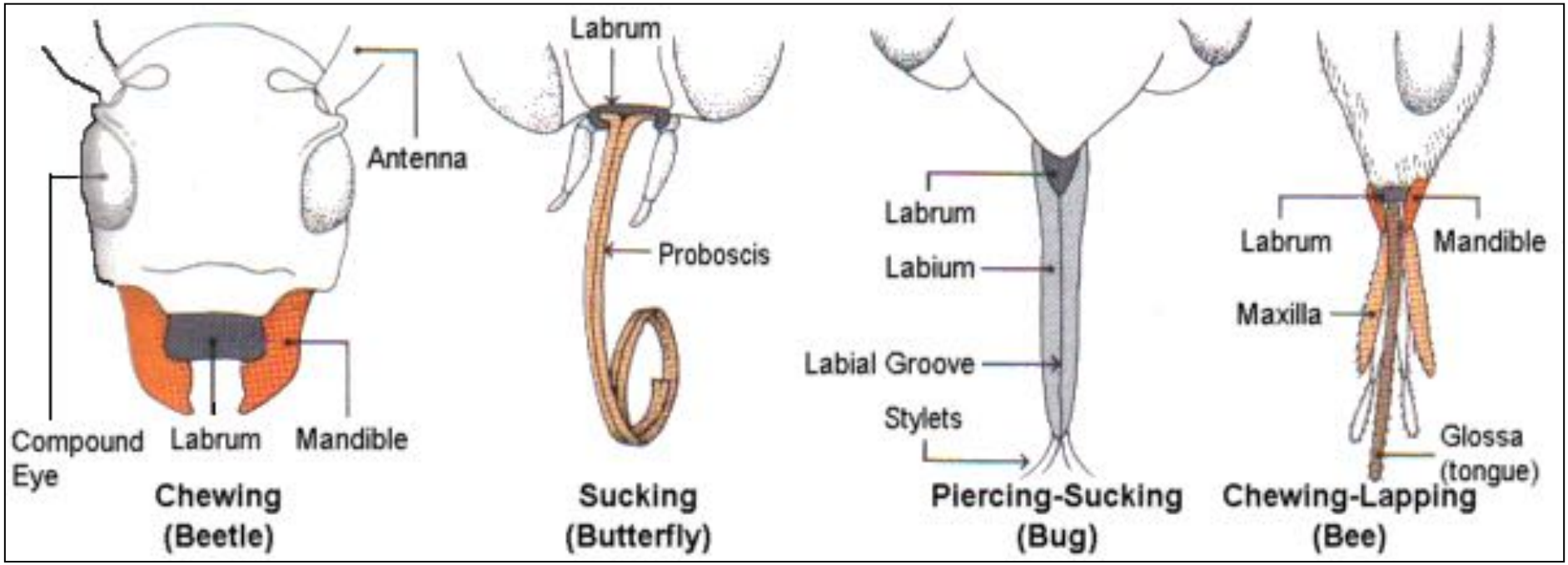
- Mites
- Thrips
- Ants
- Beetles
- Borers (*Diatrea*)
- Hemiptera (many)
- Fruit flies
- Moths
- Slugs

Insect Feeding

- 2 basic feeding patterns
  - Chewing
  - Piercing / Sucking

- Specialized mouthparts for feeding types

Mouthparts will determine the damage observed, which is useful in diagnosing pest problems



Ants

- Honeydew feeding ants like Argentine ants
- Feed on sap from the fruit & may cause blemishing
- Associated with honeydew secreting scale

Management

- Boric acid bait stations
  - Sweet bait to attract honeydew feeding ants
  - Follow the label!

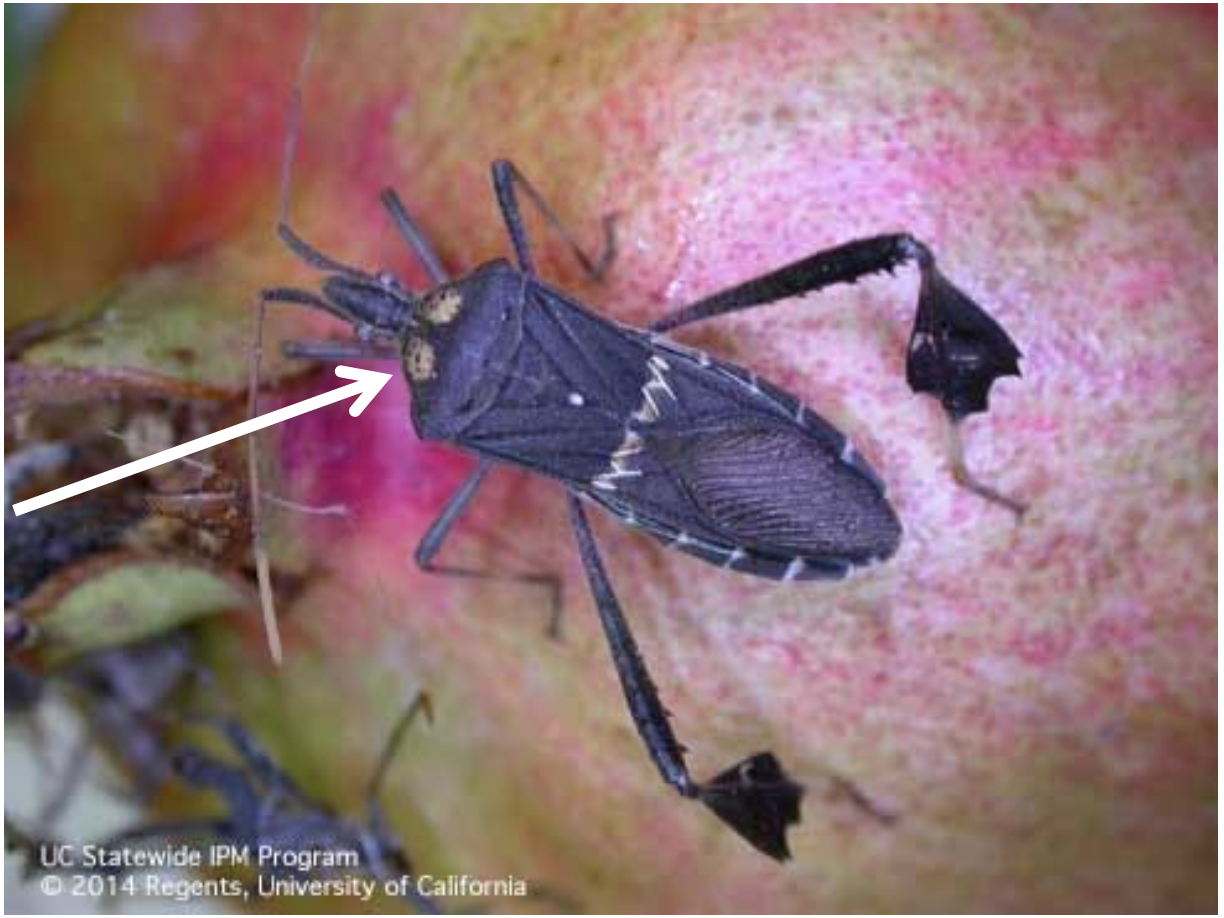
Aphids

- Piercing-sucking mouthparts
- Weakens the plant, can scar the fruit
- Honeydew producers attracts ants
  - Ants will protect scale insects from natural enemies

Western leaf-footed bug (Hemiptera)

- *Leptoglossus zonatus* (Coreidea)

2 yellow spots behind the head



- Piercing-sucking mouthparts
- Causes blemishes on fruit
- Most destructive. Feed on weeds in the spring then move into gardens/fields
- Numerous hosts, including tomato, pomegranate, eggplant

- Suspected of transmitting fungal and bacterial diseases
- Eggs are laid on the host plant, end-to-end
- Overwinter as adults. Can be seen in clusters in the fall

Management

- Remove weeds that may serve as host plants
- Build up natural enemies
  - Avoid using broad spectrum insecticides
- Neem oil / insecticidal soaps on nymphs
  - **Follow label**

Scale Insects (Hemiptera)

Red Scale


Brown Scale

Armored Scale

- 'Scale' can be separated from body, with distinct nipple
- Produce no honeydew
- Inject toxin into plants

Soft Scale

- 'Scale' is part of body, can't be separated
- Protective covering looks homogenous
- Smooth, cottony, waxy covering
- Produce honeydew

- Piercing-sucking mouthparts
- Weakens the plant
- Honeydew producers attracts ants
  - Ants will protect scale insects from natural enemies

Management

- Horticultural oils or soaps
  - Follow label
- Manage ants so natural enemies can control scale
- Crawlers are easier to manage

Mealybugs (Hemiptera)

- Piercing-sucking mouthparts
  - In high populations, can slow growth & cause die-back
- Small soft-bodies insects (0.05-0.2”)
- Have a waxy covering with filaments around the body
- Secrete honeydew
  - Sooty mold
  - Ants

Management

- Waxy coating protects them from insecticides
  - Insecticidal soaps or petroleum oils can break it down
  - Follow label!
- Neem oil
- Pyrethrins
- Manage ants for natural enemies

Cactus Moth (Lepidoptera)

- *Cactoblastis cactorum*
- Larvae have chewing mouthparts
  - Larvae do the physical damage
- Discovered in Florida in 1989
  - From S. America
  - Introduced in Australia as a control for *Opuntia* sp.
- Also found in California, Arizona, Nevada, Texas, and New Mexico

- “Snout” moths (Family: Pyralidae)
- Adult wingspan is 1 – 1.3”
- Species identified by looking at male genitalia

Management

- Horticultural oils or insecticidal soaps on small larvae
- Spinosads
- Bt for the larvae of Leps
- Pheromone traps/lures

Successful Management

- Prevention

- Prevention

- Prevention

- Be vigilant with monitoring & scouting
  - Will allow you to catch pests before they gets out of hand
  - Use direct or indirect sampling methods
    - Sample plants
    - Sticky cards, double sided tape, pheromone traps/ lures

- Develop a monitoring program
  - Allows you to determine appropriate control actions
  - Create a history record for that area/crop
    - Patterns?
  - Information on pest population dynamics

- Monitoring program should include:
  - Location & crop
  - Sampling methods used, who sampled, how many plants were inspected
  - Any pest seen, stage, abundance, & damage
  - Other info. You think may help (variety, fertilizers used, irrigation, weather, etc)

Sample Data Sheet

Date	Field #	Time	Crop	Growth Stage

Weather/field observations:

Plant #	1	2	3	4	5	6	7	8	9	10	Total
Pest 1 *[Name]*											
Larvae											
Adults											
Parasite/Predator *[Beneficial Insect Name]*											
Parasite/Predator *[Beneficial Insect Name]*											
Parasite/Predator *[Beneficial Insect Name]*											

Notes:

Plant #	1	2	3	4	5	6	7	8	9	10	Total
Pest 2 [Name]											
Larvae											
Adults											
Parasite/Predator *[Beneficial Insect Name]*											
Parasite/Predator *[Beneficial Insect Name]*											
Parasite/Predator *[Beneficial Insect Name]*											

Notes:

- Know your pests, how to control & what stage to best control, lifecycle

- Cultural control
  - Good sanitation
  - Remove weeds in and around the location
  - Keep plants healthy

- Always consult labels if using chemical control
  - Always follow label for rate, crop, pest, timing, PPE, etc
- Some sprays can disrupt biological control. Only treat if necessary.
- Treat at the correct life stage

VS.

Thank you!