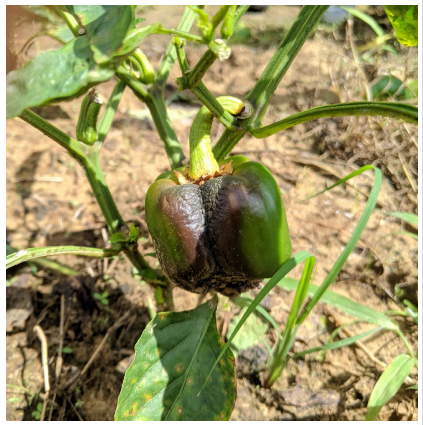
Climate

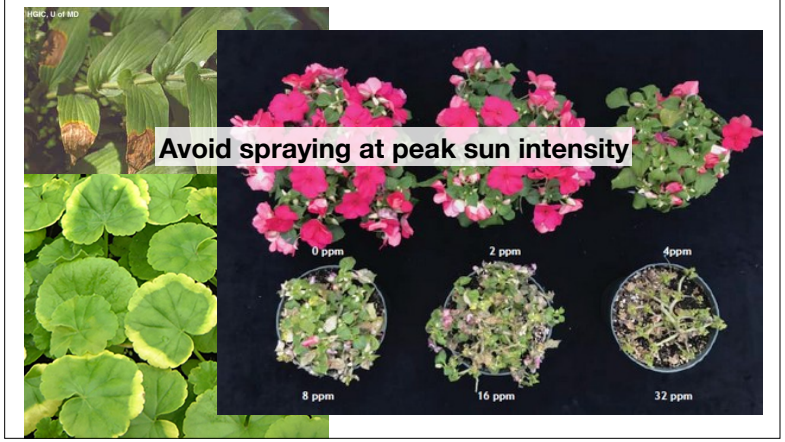
- Sunscald



41

Phytotoxicity

Unintended side-effects of pesticides on plants



42

Diseases

Plant Diagnostic Clinic

43

Anthracnose

44

Anthracnose

Fungal infection

Often spread by splashing rain

Provide space between plants for air and sunlight (quicker drying time of plants)

Spray weekly with fungicide as fruits develop

Can develop from infected seeds: heat treat
- 52°C for 30 minutes
- Newer seeds withstand heat better than old seed
- dunk hot seeds in cool water and dry

Rotate with non-solanaceous crops

45

Bacterial Leaf Spot

46

Bacterial Leaf Spot

1. Select resistant varieties
2. Purchase disease-free seed and transplants.
3. Treat seeds;
   Soak 2 minutes in 10% chlorine bleach solution.
   Thoroughly rinse seeds and dry them before planting.
4. Mulch plants deeply with a thick organic material like newspaper covered with straw or grass clippings.
5. Remove and discard badly infected plant parts and all debris at the end of the season.
6. Spray every 10-14 days with fixed copper (organic fungicide) to slow down the spread of infection.

University of Maryland Extension

47

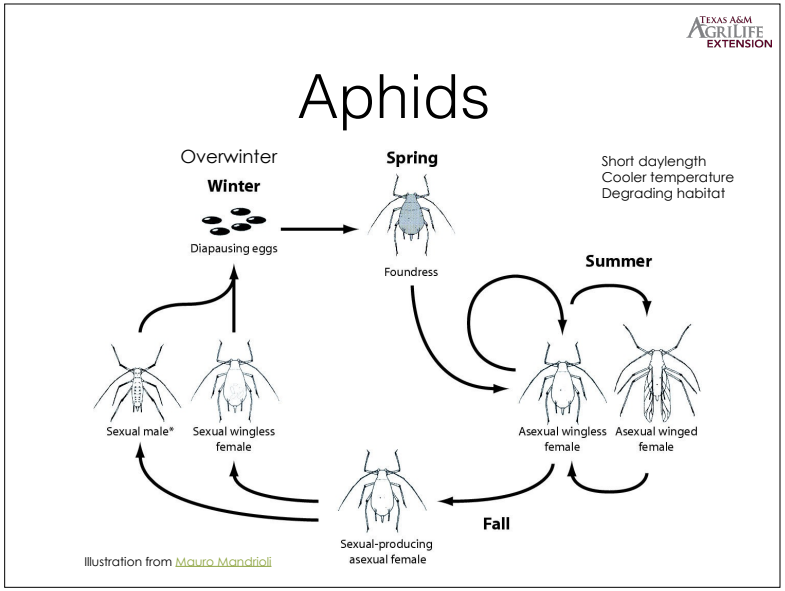
Watermelon Rind Necrosis

No current treatments available!

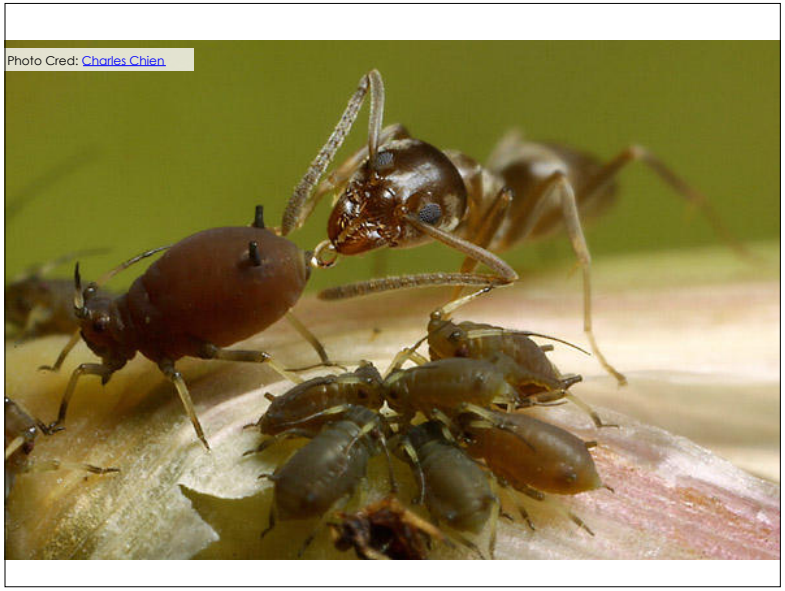
Try multiple different cultivars(?)
Purchase new seed(?)
Maintain airflow within melon patch

48

49



50



51

Aphids

Symptoms

52

Aphids

Symptoms

53

Aphids

Symptoms | Cucumber Mosaic Virus (on pepper)

54

Aphids

Symptoms | Cucumber Mosaic Virus (on cucumber)

55

Aphids

Symptoms | Lettuce Mosaic Virus

56

Biological Control | Predators

Green Lacewings

57

Biological Control | Predators

Multicolored Asian Lady Beetle

Larva
185 aphids over 11 days

Adults
35 - 45 aphids/day
~240 viable offspring
Can live longer than a year

Generalist

Tend to disperse shortly after introduction

58

Aphidius colemani

Hosts:
- Cotton aphid or melon aphid | *A. gossypii*
- Cabbage aphid | *B. brassicae*
- Green peach aphid | *M. persicae*
- Corn leaf aphid | *R. maidis*
- Greenbug or wheat aphid | *S. graminum*
- Over 40 aphid species

(Reed et al. 1994; De Conti et al. 2008)

Life-history:
- Female can produce 71 - 105 mummies (Wee Han et al. 2001)
- No mummies formed below 15°C (59F) or above 30°C (86F) (Wee Han et al. 2001' Baniameri et al. 2006)

59

59

Biological Control | Predators

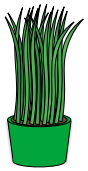
Banker plants

60

Biological Control | Predators

Banker plants

- Cereal aphids[1], bird cherry oat aphids[2,3], greenbug[5]



Cereal plants: rye[4], wheat[5], barley[5], maize[5], sorghum[5]

Parasitic wasps: *Aphidius ervi*[1,4], *A. matricariae*[2], *A. colemani*[2,3,4,5]

Texas A&M AgriLife Extension

61

Aphids

Management | Pesticide

Azadirect (Azadirachtin)
- MoA: UN
- Some translaminar; Insect Growth Regulator

Advance 10EC (Pyriproxfen)
- MoA: 7C
- Insect Growth Regulator

Abamectin 18C (Abamectin)
- MoA: 6

Pronto (Imidacloprid)
- MoA: 4A
- Systemic activity

Texas A&M AgriLife Extension

62

Soursop

- **Soursop seed borer**
- Snow Scale
- Breadfruit Mealybug

63

Soursop

Soursop seed borer
Bephratelloides pomorum Fabricius

- Wasp lays seeds in fruit while small.
- Larvae feed on the seeds
- New adults emerge; emergence holes

64

Soursop | Soursop Seed Borer

Bephratelloides pomorum Fabricius

- Wasp lays seeds in fruit while small (1.5 - 5.5 cm in diameter; 3 - 7 weeks after bloom)
- Larvae feed on the seeds
- New adults emerge; emergence holes

Paul Langlois, Museum Collections: Hymenoptera, USDA APHIS PPQ, Bugwood.org

Soursop | Soursop Seed Borer

Bephratelloides pomorum Fabricius

- Eggs: 12 - 14 days
- Larvae: 6 - 8 weeks
- Pupae: 12 - 18 days
- Adult Lifespan: ~15 days

Paul Langlois, Museum Collections: Hymenoptera, USDA APHIS PPQ, Bugwood.org

Soursop | Soursop Seed Borer

Management

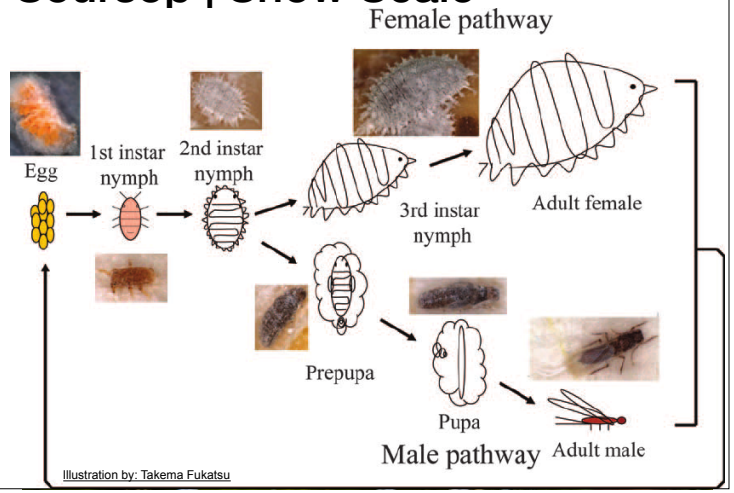
Sanitation

- Bag rotting fruit/signs of exit holes & solarize OR burn

Bagging

- Cover fruit in mesh or plastic bag when 2.5 - 5.0 mm long; ensure no mealybugs or scales on the fruit.
- Decreased successful laying of eggs in fruit over 5.5 cm in diameter

Soursop | Snow Scale



Soursop | Snow Scale

- Wash off with soapy water and scrub
- If infestation is high, consider treating both the ants and the scale:
- Drench with imidacloprid (Pronto); systemic, takes about 60 days to provide control of tree pests
- Advance (Pyriproxfen)
- Caprid (Acetamiprid)

69

Soursop | Breadfruit mealybug

Similar control strategy to snow scale.

- Wash off with soapy water and scrub
- If infestation is high, consider treating both the ants and the scale:
- Drench with imidacloprid (Pronto); systemic, takes about 60 days to provide control of tree pests
- Advance (Pyriproxfen)
- Caprid (Acetamiprid)

70

Soursop | Predators

Lacewing

71

Soursop | Predators

Lady beetles

72

Stink Bugs (Gandhi) and leaf-footed bugs

73

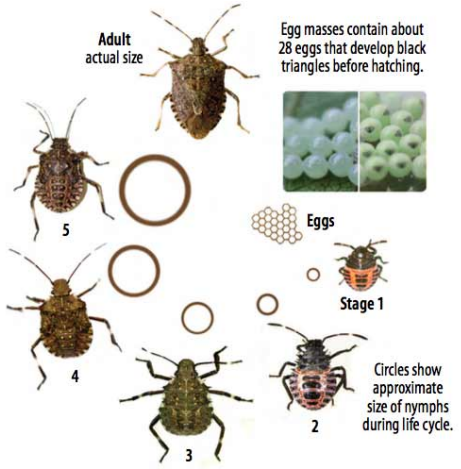
Stink Bugs (Gandhi) and leaf-footed bugs

74

Stink Bugs (Gandhi) and leaf-footed bugs

75

Stink Bugs (Gandhi) and leaf-footed bugs



76

Stink Bugs (Gandhi) and leaf-footed bugs

Damage/Symptoms

77

Stink Bugs (Gandhi) and leaf-footed bugs

Management | Traps

78

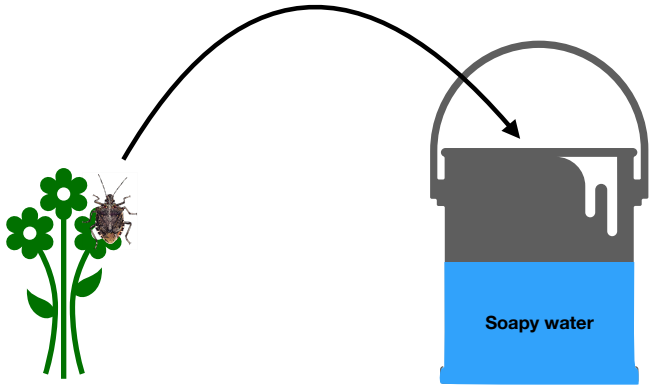
Stink Bugs (Gandhi) and leaf-footed bugs

Management | Traps

79

Stink Bugs (Gandhi) and leaf-footed bugs

Management | Collect



80