

## Two Challenging Years for Strawberries



Patrick Byers  
Regional Horticulture Specialist  
University of Missouri Extension



## Outline

- Challenges in 2007-2008
- Growing quality plants
- Using row covers
- Spider mite management

## Challenges in 2007-2008

- Spring freezes
- Wet conditions
- Pest issues
- Disease issues
- Marketing issues

## Spring 2007 Freeze

- Loss of blossoms and fruit
- Plant damage



## Insect Pests



Strawberry Leaf Roller



Two Spotted Spider Mite



Strawberry Rootworm

## Diseases

Leaf blight



Leaf spot



Gray mold



## Growing Quality Plants

- Sources of tips or plants
- Planting date
- Fall growing season
- Use of row covers
- Pest management
- Spring frost management

## Evaluating plant quality

- Which of these plants is going to make you money?



## Evaluating Plant Quality

- Remember, your spring cropping potential is determined the previous fall!



## Evaluating Plant Quality

- Evaluate quality 6-8 weeks after planting, and at intervals until plants are dormant
- Evaluate the following:
  - Plant spread and leaf development
  - Branch crown development
  - Root development
- If necessary, prolong fall growing season
  - Careful use of row covers

## Evaluating Plant Quality

- Measure a representative sample of plants from the house or field
  - Plants should be 7-10 inches in diameter



## Evaluating Plant Quality

- Count the fully developed leaves
  - A well grown plant will have 5-7 healthy leaves that have grown since transplanting
  - Leaf color – dark green
  - No evidence of spider mite damage



## Evaluating Plant Quality

- Count the branch crowns
  - A well grown plant will show 2-4 visible branch crowns



## Evaluating Plant Quality

- Dig the sample plants, and examine the roots
  - Look for large healthy roots that originate from above the crown area above the plug
  - Roots should be pale and show lower order roots



## Evaluating Plant Quality

- Cut the roots just below the crown and observe the root cross sections
  - Healthy roots are pale or white



## Evaluating Plant Quality

- Slice the crown vertically and observe the cross section
  - Section should be a uniform light color



## Evaluating Plant Quality

- Plant diameter
- Number of healthy leaves
- Number of branch crowns
- Root systems
- Root cross sections
- Crown cross section



## Evaluating Plant Quality

- Response if plants are not at optimum size
  - Cover with row cover to prolong warm conditions for growth

## Evaluating Stand Quality

- Matted row
  - Prior to renovation, 75% of row should be occupied by strawberry plants



## Use of Row Covers

- In the fall to prolong the growing season
- In the winter to protect plants
- In the spring to protect from cold damage
- 1.5 ounce weight is usual; other options include two layers of lighter weight

## Use of Row Covers

- Prolong fall growing season
  - Evaluate plant condition
  - Evaluate growing conditions
  - Stunt grass in row middles
  - Apply as early as transplanting; commonly place in November if needed



## Use of Row Covers

- Winter protection



## Use of Row Covers

- Winter protection
  - Place by mid December
  - Leave in place until leaves begin to green up (generally in late Feb or early March); some growers encourage early production by leaving covers in place until bloom



## Use of Row Covers

- Spring freeze protection



## Use of Row Covers

- Spring freeze protection
  - 1.5 ounce weight
  - Apply in advance of frost
  - 6-8 degrees of frost protection
  - Can combine with sprinklers for increased protection
  - Used in high tunnels for added freeze protection



## Spider Mite Management

- Severe problem in high tunnel strawberries
  - Good winter survival in tunnel
  - Warm growing conditions
  - Dry conditions
- Can be a problem in field grown strawberries



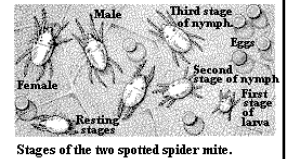
## Spider Mite Management

- Two spotted spider mite



## Spider Mite Management

- Small, spider like mites
- Usually found on underside of leaf; feed on cell sap
- Spread by walking or wind
- 10 or less mites per leaflet can cause economic damage



Stages of the two spotted spider mite.

## Spider Mite Management

- Symptoms
  - Leaves mottled, curling, yellow stippling
  - Webbing
  - Usually noted first in "hot spots"
  - Adults and eggs noted with 10x hand lens



## Spider Mite Management

- Monitoring and thresholds
  - Collect 60 leaflets per field or house
  - Examine leaves for presence of mites
  - Control is justified if 25% of leaves have one or more mites
  - When to monitor?
    - Tunnels/plasticulture – 3-4 weeks post planting; in advance of applying rowcovers; when row covers are removed; when foliar bronzing is noted
    - Field – when mulch is removed; when foliar bronzing is noted
- Control measures
  - Avoid use of pesticides that disrupt predator mite populations (carbaryl is particularly bad)

## Spider Mite Management

- Predator mites
  - Watch for predator mites when scouting for two spotted mites
  - Several predator mites; common species is *Neoseiulus fallacis*
  - Release time – when covers or mulch are removed in spring; possibly in the fall
  - Release rates
    - Short term control – 7000-10000/acre
    - Long term control – 500-1000/acre



## Spider Mite Management

- Applications of labeled miticides
  - Agri-mek
  - Savey
  - Acramite
  - Danitol
  - Zeal
  - Kelthane
  - Kanemite
  - Oberon
- Remember that most miticides don't kill eggs – a second application may be needed in 5-7 days if eggs are present
- Remember that miticides can disrupt predatory mite populations

## Any Questions?

