Solanaceous Crops

- Family: Solanaceae
- Warm Season Perennials
- Naturally self pollinating
  - Tomato (*Lycopersicon esculentum*)
  - Pepper (*Capsicum annuum, C. frutescens, C. chinense*)
- Other Solanaceous crops:
  - Potato (*Solanum tuberosum*)
  - Eggplant (*Solanum melongena*)
  - Tomatillo (*Physalis ixocarpa*)
Tomato

• Lycopersicon esculentum var. esculentum
  (not: Lycopersicon lycopersicum)
• Arguably the most important vegetable crop
  • Acreage, production, value
• Types:
  – Fresh Market
    – Salad
    – Beefsteak
    – Cherry
    – Greenhouse
  • Typically hand harvested
  – Processing
    – Pear or Roma shape (old processing varieties are round)
    – High solids content (>6%)
  • Typically machine harvested

Tomato Industry

• Fresh Market:
  – 27% of total US acreage, 62% of value
  • Grown Year-Round
  • Spring & Summer: Through-out the US
    – Spring: California & Southern US
    – Summer: Georgia & North
  • Winter: Mostly Florida
• Processing Tomato:
  – 73% of total US acreage, 38% of value
  • California (94% of acreage)

Tomato: Perfect Flower (Hermaphrodite)
Stigma enclosed within anther tube
Plant Growth & Development

- Vine Types:
  - Determinate
    - Shoots terminate in flower cluster
    - 1 or 2 leaves between flower clusters
    - More concentrated yield
  - Semi-determinate
    - In between determinate & indeterminate
  - Indeterminate
    - Shoots continue to grow with no terminal flower clusters
    - 3 to 4 leaves between flower clusters
    - Yield tends to be spread out over growing season
    - Need Support

Blossom-end Rot: Physiological disorder caused by calcium deficiency

Cracking caused by excess moisture

Catfacing: distorted fruit at blossom end resulting in scar tissue forming
Colorado Potato Beetle

Fleabeetle Damage

GREEN - Stage 1
“Green” means that the surface of the tomato is completely green in color. The shade of green may vary from light to dark.

BREAKER - Stage 2
“Breakers” means there is a definite “break” in color from green to tanish-yellow, pink or red on not more than 10% of the surface.

TURNING - Stage 3
“Turning” means that more than 10% but not more than 30% of the surface, in the aggregate, shows a definite change in color from green to tanish-yellow, pink, red or a combination thereof.

PINK - Stage 4
“Pink” means that more than 30% but not more than 60% of the surface, in the aggregate, shows pink or red in color.

LIGHT RED - Stage 5
“Light red” means that more than 60% but not more than 90% of the surface, in the aggregate, shows pink or red in color.

RED - Stage 6
“Red” means that more than 90% of the surface, in the aggregate, is red.

Jointed vs. Jointless Fruit
• End of Material for Exam 2
• Next Slide Starts Material for Exam 3
Post Harvest - Tomato

- Optimum Storage Temperature
  - Mature Green: 57-61°F
  - Pink: 50°F
  - Red Ripe: Room Temperature
    - Up to a week
    - Last longer at 39°F (up to 3 weeks), but I wouldn't want to eat it!
  - All Tomatoes are chilling sensitive at temperatures below 50°F
- Optimum Relative Humidity: 90 to 95%
- Sensitive to ethylene