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
- 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: Throughout 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

Eastern Black Nightshade

- Tomato Center of Origin:
  - Andes Mts.
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

Stinkbug feeding

Stinkbug damaged fruit

Spider mite damaged fruit

Tomato fruitworm feeding
Colorado Potato Beetle

Fleabeetle Damage

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
    - 3 Weeks
  - Pink: 50°F
    - 1 Week
  - 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