Cucurbit Crops

- Family: Cucurbitaceae
- Vine Crops (Although some have extremely shortened internodes)
- Warm Season Annuals
- Naturally outcrossing
  - Cucumber (*Cucumis sativus*)
  - Melon – Cantaloupe & Honeydew (*Cucumis melo*)
  - Watermelon (*Citrullus lanatus*)
  - Squash & Pumpkin (*Cucurbita pepo, C. maxima & C. moschata*)

Cucumber

- *Cucumis sativus*
- Center of Origin: India
- Types:
  - American Slicer
  - American Pickle
  - European Pickle
  - European Greenhouse
  - Beit Alpha
  - Armenian
  - Asian/Japanese/Burpless
  - Lemon
  - Gherkin

American Slicer
European Pickle

Dutch Cuke
English Cuke
European Greenhouse
Flower Development

- Monoecious - Typical
- Gynoecious - Advantages
- Parthenocarpic – Needed for Gy
- Andromonoecious – Specialty Types
Mechanized harvest for processing types

Cucumis anguria
Post Harvest - Cucumbers

• Immature Fruit
  – Cool as soon as possible after harvest
  • Fruits continue to ripen at temperatures >50°F
  – Optimum Temperature: 50 to 55°F
  – Optimum Relative Humidity: 95%
  – Shelf-life: 10 to 14 days
  – Chilling injury at temperatures <50°F

Melon

• *Cucumis melo*
• Center of Origin: Western Africa or Middle East?
• Reticulatus group: all types with netting, fruit “slips” off the vine, musky aroma
  – “cantaloupe”, muskmelon, western shipper
• Inodorus group: smooth skin, does not slip
  – Honeydew, casaba, crenshaw, winter melon
• Cantalupensis group: rough skin, no net, slips off the vine
  – Not typically grown in the US
Flower Development

- Andromonoecious - Typical
- Monoecious
- Gynoecious – Breeders currently working to make Gy cultivars
- No Parthenocarpy currently available

Post Harvest - Melon

- Mature Fruit
  - Cool as soon as possible after harvest
  - Optimum cooling temperature = 40°F
  - Optimum Temperature: 36 to 45°F
  - Optimum Relative Humidity: 90 to 95%
  - Shelf-life: 2 to 3 weeks
  - Chilling injury at temperatures <50°F for prolonged periods (2 to 3 weeks)
  - Ethylene sensitive

Watermelon

- *Citrus lanatus*
- Center of Origin: Tropical Africa
Flower Development

- Monoecious – Typical
- Andromonoecious
- No Gynoecious currently available
- No Parthenocarpy currently available
- Seedless Watermelon from triploids

Creating Seedless Watermelon

Diploid Watermelon (AA) 2n = 22
High Fertility

Tetraploid Watermelon (AAAA) 4n = 44
Low Fertility

↓ Chromosome Doubling

Triploid Watermelon (AAA) 3n = 33
Very Low Fertility (Seedless)

Post Harvest - Watermelon

- Mature Fruit
  - Cool as soon as possible after harvest
    - Optimum cooling temperature = 40°F
  - Optimum Temperature: 50 to 60°F
  - Optimum Relative Humidity: 90 to 95%
  - Shelf-life: 2 to 3 weeks
  - Chilling injury at temperatures <50°F for longer than a few days
  - Considered Ethylene insensitive
Squash & Pumpkin

- **Cucurbita pepo**
  - Summer squash (Yellow, zucchini & scallop)
  - Winter squash (Acorn)
  - Small pumpkins (pie/miniatures)
- **Cucurbita maxima**
  - Large pumpkins (decorative & jumbo’s)
  - Winter squash (Hubbard, Delicious, etc…)
- **Cucurbita moschata**
  - Large pumpkins (cheese & crookneck)
  - Winter squash (Butternut)

Vine Types

Cucurbita pepo

Yellow Straight Neck Summer Squash

Acorn Squash Winter Squash
**Cucurbita moschata**
Cheese Pumpkin

**Cucurbita maxima**
Post Harvest – Squash & Pumpkin

- Mature Fruit
  - No cooling required
  - Optimum Temperature: >50°F
  - Optimum Relative Humidity: 50 to 75%
  - Shelf-life: 6 to 8 weeks to 6 months (type)

- Immature Fruit
  - Benefit from cooling
  - Optimum Temperature: 41 to 50°F
  - Optimum Relative Humidity: 95%
  - Shelf-life: 1 to 2 weeks