Crucifer Crops

- Family: Cruciferae (“cross-bearers”)
- Cole Crops (“stem” or “stalk”) or Brassica Crops
- Cool Season Biennials, Naturally outcrossing
  - Cabbage (Brassica oleracea)
  - Broccoli (Brassica oleracea)
  - Cauliflower (Brassica oleracea)
  - Kohlrabi (Brassica oleracea)
  - Brussels Sprouts (Brassica oleracea)
  - Chinese Cabbage (Brassica rapa)
- Greens Crops
  - Collards & Kale (Brassica oleracea)
  - Pac Choi (Brassica rapa)
  - Mustards (B. juncea, B. rapa, B. hirta, B. nigra)
- Rooted Crops
  - Turnip (Brassica rapa)
  - Rutabaga (Brassica napus)
  - Radish (Raphanus sativus)

Cabbage

- Brassica oleracea (Capitata group)
- Center of Origin: Western Europe
- Types:
  - Wakefield (Pointed)
  - Copenhagen (Round, medium/large, early, fresh type)
  - Flat Dutch (Large, flat, solid, storage type)
  - Danish Ballhead (Round/oval, medium, late, storage type)
  - Savoy (crinkled leaves, excellent fresh market quality)
  - Red (Round, medium size, reddish-purple color)
Plant Growth & Development

- Herbaceous Biennial
- Extremely shortened internodes
- Vernalization required for flowering
  - Must have passed juvenile stage
- Flowering process begins with elongation of internodes
- Perfect flowers
- Self-incompatibility reduces self-pollination
- Pest & Disease problems

Post Harvest - Cabbage

- Optimum Storage Temperature: 32°F
- Optimum Relative Humidity: 98 to 100%
- Shelf-life:
  - Early Cabbage: 1 to 2 months
  - Late Cabbage: 5 to 6 months
- Sensitive to ethylene

Broccoli & Cauliflower

- Brassica oleracea
  - Broccoli: Italica group
  - Cauliflower: Botrytis group
- Center of Origin: Western Europe
- Presumed that Cauliflower evolved from Broccoli

Cabbage Looper

Diamondback Moth

Imported cabbageworm

Blackrot

Broccoli heads terminate in Immature green buds

Cauliflower head terminate in In highly branched, undifferentiated Terminal ends of shoots (Curd)
Plant Growth & Development

- Pseudo-Biennial
  - Vernalization required for flower initiation
  - But temperatures much higher than for cabbage
- Perfect flowers
- Self-incompatibility reduces self-pollination (though not generally as extreme as cabbage)
**Post Harvest**

- **Broccoli**
  - Optimum Storage Temperature: 32°F
  - Optimum Relative Humidity: 95 to 100%
  - Shelf-life: 10 to 14 days
  - Sensitive to ethylene
- **Cauliflower**
  - Optimum Storage Temperature: 32°F
  - Optimum Relative Humidity: 95 to 98%
  - Shelf-life: 3 to 4 weeks

**Brussels Sprouts**

- *Brassica oleracea* (Gemmifera group)
- Center of Origin: Western Europe
- Essentially a non-heading cabbage with elongated internodes
- Cool Season Biennial
- Long season – later than cabbage

**Kohlrabi**

- *Brassica oleracea* (Gongylodes group)
- Center of Origin: Western Europe
- Root-like, enlarged stem just above the soil surface
- Cool season biennial
- Quick growing crop
Chinese Cabbage

• Napa & Michihili Cabbage (pe-tsai)
  – *Brassica rapa* (Pekinensis group)
  – Heading form
  – Pseudo-biennial
• *Pak Choi* (Bok-Choy)
  – *Brassica rapa* (Chinensis group)
  – Non-heading form
  – True biennial
• Center of Origin: Eastern Asia
• Cool season – will not tolerate heat (>70°F)