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)
Copenhagen Market Type

Danish Ballhead & Flat Dutch Cabbage

Savoy Cabbage

Red Cabbage

Wakefield Cabbage
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

Broccoli heads terminate in immature green buds
Cauliflower head terminate 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 & Michihli 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)