Today's Lecture

• Classification of vegetables
• Nutritive value of vegetables

Classification of Vegetables

• Why do we need to classify vegetables?
  – What's the name?
    • Botanical classification
  – What part do you eat?
    • Edible plant part
  – Where and when do you grow it?
    • Temperature requirements
  – How does it grow?
    • Life cycle

Botanical Classification

• Division – Spermatophyta
  – Class – Angiospermae
    • Subclass – Monocot or Dicot
      – Family
        » Genus
        » Species
        » Group or subspecies
        » Cultivar
## Important Monocots

- Alliaceae (Allium Family)
  - Onion, Garlic, Leek, Shallot
- Gramineae (Grass Family)
  - Sweet corn
- Liliaceae (Lily Family)
  - Asparagus

## Most Vegetables are Dicots

- Compositae (Sunflower Family)
  - Lettuce, Globe artichoke, Jerusalem artichoke
- Convolvulaceae (Morning-glory Family)
  - Sweet potato
- Cruciferae (Mustard Family)
  - Cabbage, broccoli, cauliflower, kohlrabi, collard, kale, brussels sprouts, Chinese cabbage, turnip, radish

- Cucurbitaceae (Gourd Family)
  - Cucumber, watermelon, cantaloupe, honeydew melon, summer squash, winter squash, pumpkin
- Leguminosae (Pea/Bean Family)
  - Snap bean, pea, cowpea, black-eyed pea
- Malvaceae (Cotton Family)
  - Okra
- Solanaceae (Nightshade Family)
  - Tomato, pepper, eggplant, potato
- Umbelliferae (Parsley Family)
  - Celery, carrot, parsnip, parsley
Edible Parts - Underground

- **Roots**
  - Beet, carrot, parsnip, radish, rutabaga, sweet potato, turnip
- **Tuber**
  - Potato, Jerusalem artichoke
- **Bulb**
  - Garlic, leek, onion

Edible Parts – Above ground

- **Stem**
  - Asparagus, kohlrabi
- **Leaf**
  - Brussels sprout, cabbage, celery, chard, chinese cabbage, collard, kale, lettuce, spinach
- **Floral**
  - Broccoli, cauliflower, globe artichoke

Edible Parts – Above ground

- **Immature Fruit**
  - Cucumber, eggplant, okra, snap bean, summer squash, sweet corn
- **Mature Fruit**
  - Honeydew, muskmelon, cantaloupe, pepper, podded pea, pumpkin, tomato, watermelon, winter squash
- **Seed**
  - Cowpea, garden pea, soybean, lima bean
Classification by Temperature

Cool season crops

• Hardy:
  – Asparagus, broccoli, brussels sprouts, cabbage, collard, garlic, kale, kohlrabi, leek, mustard, onion, pea, radish, rhubarb, rutabaga, spinach, turnip
• Half-hardy:
  – Beet, carrot, cauliflower, celery, chard, chinese cabbage, globe artichoke, Jerusalem artichoke, lettuce, parsnip, potato

Warm Season Crops

• Tender:
  – Cowpea, snap bean, soybean, sweet corn, tomato
• Very Tender:
  – Cucumber, cantaloupe, eggplant, honeydew, lima bean, okra, pepper, pumpkin, squash, sweet potato, watermelon

Classification by Life Cycle

• Perennials
  – Asparagus, eggplant, garlic, globe artichoke, Jerusalem artichoke, lima bean, pepper, potato, rhubarb, sweet potato, tomato
• Biennials
  – Beet, broccoli, Brussels sprout, cabbage, carrot, cauliflower, celery, chard, Chinese cabbage, collard, kale, kohlrabi, leek, onion, parsnip rutabaga, turnip
Annual Crops

- Cowpea, cucumber, cantaloupe, honeydew, lettuce, okra, pea, pumpkin, snap bean, soybean, spinach, squash, sweet corn, watermelon
- Text also lists:
  - Broccoli, cauliflower, Chinese cabbage, mustard (vernalization)
  - Potatoe?

Nutritive Value of Vegetables

- Mom always said “eat your vegetables”
- Vital source of essential minerals, vitamins and dietary fiber - Handout
- Also a source of carbohydrates, protein and energy
- More recently recognized as a vital source for phytochemicals

Overview of the health benefits of fruit and vegetable consumption for the dietetics professional: Selected literature. Journal of the American Dietetic Association, Dec, 2000, by Maryann S. Van Duyn, Elizabeth Pivonka

Reduction Cancer Risk
20% reduction

Reduced risk of Coronary Heart Disease
20-40% reduction

Reduced risk of Stroke
up to 25% reduction

Also: Cataracts, Chronic Obstructive Pulmonary Disease, Diverticulosis, and Hypertension
ANTICANCER AGENTS IN FOODS

- Carotenoids - Antioxidant
  - Tomato, watermelon, grapefruit
- Flavonoids - Antioxidant
  - Citrus, most vegetables, tea, wine
- Sulfides - stimulant
  - Onions and Garlic
- Glucosinolates/Indoles - protectant, inducer
  - Crucifer Family