Classification, Use, Consumption & Nutritional Value of Vegetables

Definition of ‘Vegetable’

- The Product of a Herbaceous Plant That May or May Not Be Associated With the Flower & Which Can Be Eaten Raw or With Simple Culinary Preparation
- ‘A Herbaceous Plant Cultivated for an Edible Part’

Why Classify Vegetables?

- At Least 10,000 Species Used as Vegetables
- Plants That Share Some Characteristics Placed in Groupings

Classification Schemes

- Botanical
- Family Grouping or Accepted Use
- Edible Parts
- Life Cycle
- Sensitivity to Temperature
Botanical Classification

- Based on Similarity in Morphological Structures, Often With Flower Structure as Main Criteria for Determining Relationships
- Plants Within a Family Usually Have Similarities
- Family Names End Same Way
  - Names End in *aceae*

Family Grouping/Accepted Use

- Convenient & Widely Used
- Often Similar Culture & Pests
- Cole Crops
  - aka Crucifers or *Brassicas*
  - Native to Temperate & Cold Climates
  - Family Includes Cabbage, Broccoli, Cauliflower & Brussels Sprouts

- Greens
  - Leafy Crops That Are Usually Eaten After Cooked
  - *Amaranthaceae* & *Brassicaceae*
- Salad Crops
  - Used Mainly for Leaves & Eaten Raw
  - *Asteraceae* & *Apiaceae*
- Root Crops
  - Prominent, Fleshy Underground Structure
  - Root or Hypocotyl With Taproot Forming Below
  - *Apiaceae*

- Legumes or Pulse Crops
  - *Fabaceae* Family
  - About 600 Genera & 12,000 Species
  - Many Can Fix Nitrogen
- Sweet Corn
  - *Poaceae* Family
  - Monocot
  - Inflorescence as Group of Flowers Called Spikelets
  - Flowers Are Small & the Fruit Is a Kernel

- Perennial Crops
  - In Field More Than 2 Years
  - Aboveground Parts Killed Each Year in Temperate Regions But Roots Alive
  - *Liliaceae*, *Asteraceae* & *Polygonaceae*
- Bulb Crops
  - Allium or *Amaryllidaceae*
  - Plants Have Bulbs or Corms
  - Onion, Garlic & Leeks

- Solanaceae Crops
  - Nightshade Family
  - Many Contain Alkaloids Such as Nicotine
• Cucurbits
  - Cucurbitaceae (Gourd)
  - Tendrils, Leaves That Are Often Rough to Touch, Large Fleshy Fruits With Many Seeds

Edible Parts

• Cool-Season Vegetables
  - We Eat Vegetative Parts (Petioles, Roots), Bud or Inflorescence
  - Peas?
• Warm-Season Vegetables
  - Edible Fruits or Seeds
  - Exceptions?

Time Required to Complete Life Cycle

• Annuals
• Perennials
  - Asparagus
• Biennials

Sensitivity to Temperature

• Hardiness & Climatic Requirements
• Cool- vs. Warm-Season
• Hardy vs. Tender Pertains to Frost Tolerance

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<tr>
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<th>Cool-Season</th>
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<td>Hardy</td>
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Vegetables

• Classification
• Uses
• Per Capita Consumption
• Nutritional Value

Uses for Vegetables

• Food, Garnishes
• Medicinal Uses
  - Functional Foods, Nutraceuticals, Phytochemicals, Phytonutrients, Phytoceuticals
• Ornamental Uses
Vegetables

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Eating Veggies Makes Men More Attractive

- Healthier Skin Tone
- Antioxidant Carotenoid Pigments

Supernutritious Vegetables

- Plant Breeders Focusing Efforts on Making Vegetables Even More Healthful
- New Cultivars with High Levels of Vitamin C, Beta-Carotene & Quercetin
- ‘Designer Vegetables’

Frozen Veggies Are Healthy

- “You Don’t Need to Eat Like the 1% to Eat Healthily” --Dr. Oz
- Clarence Birdseye in 1920s Developed a High-Pressure, Flash-Freezing Technique That Operated at Especially Low Temps
- This Method Allowed Only Small Crystals to Form & Preserved Much More of the Vitamins & Freshness

Caveat

- Vitamin Content of Most Vegetables Is Influenced By Variations in Growing Conditions, Time to Maturity, Postharvest Handling & Food Preparation
- Many Vitamin Levels Often Reported for Vegetables Are Attained Under Optimum Growing Conditions & May Be Higher Than Actual Levels in Commercially Available Vegetables