

# Pumpkins

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BIOL 108H – Honors Freshman Biology Seminar

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Overview | **Biology** | Summary

## A. The Pumpkin in Holiday Foods



**Pumpkin seeds**



**Pumpkin bread**



**Pumpkin Pie**

Overview | **Biology** | Summary

B. Commercial Production

**Table 1. United States pumpkin production  
(in millions of pounds) in 2011, top six states (USDA 2013).**

1. Illinois.....	520
2. California.....	168
3. Ohio.....	112
4. Pennsylvania.....	103
5. Michigan.....	99
6. New York.....	69
<hr/>	
Total....	1,071

Overview | **Biology** | Summary

A. Taxonomy & Biogeography

1. What is a "pumpkin"?
  - Edible squash with ribbed rinds
  - Orange skin & flesh



Photo © Burpee Seed Co.



Photo © Territorial Seed Co.



Photo © Territorial Seed Co.

Overview	Biology	Summary
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## A. Taxonomy &amp; Biogeography

## 2. "Pumpkin" etymology

- British English *pumpion* (c. 1550 AD)
- French *pompon*
- Greek *pepon* ("large melon")

Webster's (1966)



Photo © Burpee Seed Co.



Photo © Territorial Seed Co.



Photo © Territorial Seed Co.

Overview	Biology	Summary
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## A. Taxonomy &amp; Biogeography

3. Squash genus: *Cucurbita* (12-14 spp.; US to Argentina)
4. Gourd family: Cucurbitaceae (745 spp; Cosmopolitan)
5. Confamilial relatives: squash, gourds, melons, cucumber, luffa

Sanjur et al. (2002) and Heywood et al. (2007)

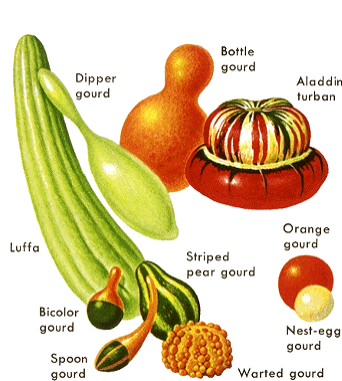


Photo from Howstuffworks.com



Photo © Thompson-morgan.com



Photo © Mcjerry







Drawing from Marco (1837)

Overview	Biology	Summary
A. Taxonomy & Biogeography		
6. Species and cultivars		

Overview	Biology	Summary
A. Taxonomy & Biogeography		
Many pumpkins are cultivated varieties (cultivars) of <i>Cucurbita pepo</i> L. (Sanjur et al. 2002).		

Overview	Biology	Summary
<p>A. Taxonomy &amp; Biogeography</p> <p>Many pumpkins are cultivated varieties (cultivars) of <i>Cucurbita pepo</i> L. (Sanjur et al. 2002).</p>		
Genus	Specific epithet	Author of species; typically abbreviated (L. = Linnaeus), not italicized, and not needed to be included after first use.

Overview	Biology	Summary
<p>Many pumpkins are cultivated varieties (cultivars) of <i>Cucurbita pepo</i> L.</p>		
 <p>Connecticut Field Pumpkin (<i>Cucurbita pepo</i> 'Connecticut Field') Photo © Gurney's Seed &amp; Nursery Co.</p>	 <p>Small Sugar Pumpkin (<i>Cucurbita pepo</i> 'Small Sugar') Photo © Territorial Seed Co.</p>	 <p>Howden Pumpkin (<i>Cucurbita pepo</i> 'Howden') Photo © Park Seed Co.</p>
 <p>Jack Be Little Pumpkin (<i>Cucurbita pepo</i> 'Jack Be Little') Photo © Burpee Seed Co.</p>		



Overview	Biology	Summary
 		<p>Smith (1997) reports that <i>Cucurbita pepo</i> was domesticated in Mexico 10,000 years ago.</p> 

Overview	Biology	Summary
<p>A. Taxonomy &amp; Biogeography</p>		
<p>Most canned pumpkin is from <i>Cucurbita moschata</i> Duchesne, a domesticated species of tropical South American ancestry (Sanjur et al. 2002)</p>		
 <p>Long Island Cheese Pumpkin (<i>Cucurbita moschata</i> 'Cheese') Photo © Long Island Seeds (liseeds.com)</p>	 <p>Dickinson Pumpkin (<i>Cucurbita moschata</i> 'Dickinson') Photo © Sustainable Seed Co.</p>	 <p>Neck Pumpkin (<i>Cucurbita moschata</i> 'Neck Pumpkin') Photo © Homekitchengarden.com</p>

Overview **Biology** Summary

A. Taxonomy & Biogeography

Some pumpkins grown for ornament or sport are cultivars of *Cucurbita maxima* Duchesne, a domesticated species of NW tropical South American ancestry (Sanjur et al. 2002)



Dill's Atlantic Giant  
(*Cucurbita maxima* 'Dill's Atlantic Giant')  
Photo © Park Seed Co.

Overview **Biology** Summary


US  
**RHODE ISLAND MAN WINS \$15,500 WITH RECORD-BREAKING 2,000 POUND PUMPKIN**

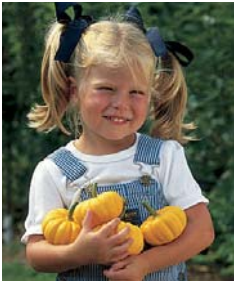



Sep. 30, 2012 8:43pm | Erica Ritz 60 0 0 1 27



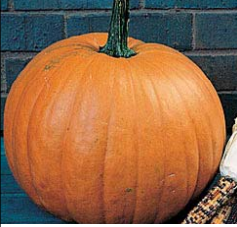
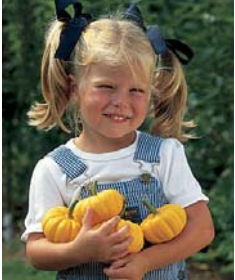



Ron Wallace of Rhode Island celebrates after tipping the scales with his 2009-pound record breaking pumpkin during the New England Giant Pumpkin Weigh-Off at the Topsfield Fair in Topsfield, Mass Friday, Sept. 28, 2012. (Photo: AP)





Ritz (2012)

Overview	Biology	Summary
 <p>What appears to be the record-breaking pumpkin is weighed at the final contest. (Photo: YouTube)</p>		



Overview	Biology	Summary
<p>A. Taxonomy &amp; Biogeography</p>		
<p>Non-pumpkin cultivars in same species may look very different.</p>		   <p>acorn squash cultivar ^ of <i>Cucurbita pepo</i> (<i>Cucurbita pepo</i> 'Table Queen') Photo © USDA</p>
  <p>&lt; pumpkin cultivars of <i>Cucurbita pepo</i></p>		



Overview	Biology	Summary
<p>A. Taxonomy &amp; Biogeography</p> <p><b>Non-pumpkin cultivars in same species may look very different.</b></p>		
   	 <p>zucchini cultivar ^ of <i>Cucurbita pepo</i> (<i>Cucurbita pepo</i> 'Sure Thing') Photo © Burpee Seed Co.</p> <p>&lt; pumpkin cultivars of <i>Cucurbita pepo</i></p>	

Overview	Biology	Summary
<p>B. Structure &amp; Ecology</p> <p><b>1. Pumpkin plants....</b></p> <ul style="list-style-type: none"> <li>•are scrambling herbs or climbing vines w/ tendrils</li> <li>•have showy flowers borne in leaf axils</li> <li>•have unisexual flowers</li> </ul>		
  		

Overview	Biology	Summary
B. Structure & Ecology		<b>2. Pollination</b> <ul style="list-style-type: none"> <li>• bees</li> </ul>
		 <p>Male flowers from 'Atlantic Giant' pumpkin cultivar.</p> <p>Female flowers from 'Atlantic Giant' pumpkin cultivar.</p>

Overview	Biology	Summary
B. Structure & Ecology		<b>3. Ovaries and pepos</b> <p>The ovary of female flower develops into "pepo."</p> <ul style="list-style-type: none"> <li>• We call this pepo a pumpkin .</li> </ul>
		

Overview **Biology** Summary

B. Structure & Ecology

4. The rind

The cooked fruit wall (rind) is pureed and used for breads, pie, soup, etc.



Overview **Biology** Summary

B. Structure & Ecology

5. Nutrition

Pumpkin is rich in fiber and vitamins:

- Fibrous veins and cell walls in rind
- Carotenoids (esp. beta-carotene)

Serving size: 1 slice (133g)

Nutrition Facts	
Serving Size 133 g	
Amount Per Serving	
Calories 323	Calories from Fat 117
% Daily Value*	
<b>Total Fat</b> 13g	20%
Saturated Fat 3g	13%
Trans Fat	
<b>Cholesterol</b> 35mg	12%
<b>Sodium</b> 310mg	13%
<b>Total Carbohydrate</b> 46g	15%
Dietary Fiber 2g	10%
Sugars 25g	
<b>Protein</b> 5g	
Vitamin A 91%	Vitamin C 0%
Calcium 9%	Iron 7%
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.	
NutritionData.com	





Overview	Biology	Summary
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1. Pumpkin plants scrambling or vining plants with tendrils and showy, unisexual flowers.
2. Fruits diverse in form, nutritious and tasty.
3. From 3 New World species of *Cucurbita*.
4. Domestication started at least 10,000 years ago.



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