

**Growing  
&  
Preserving  
Nutritious Food**

**By Robert Pavlis**

# The Real Cost of Food

Food Item	Cost/ 500g
Washed, cut iceberg lettuce	\$3.00
Shelled peanuts	\$3.00
Honeycrip apples	\$2.00

US\$, Walmart

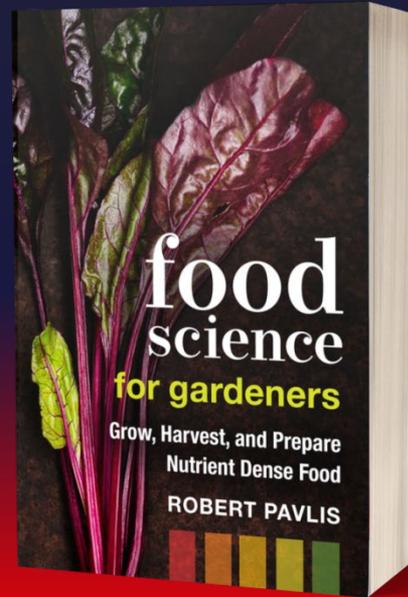
# The Real Cost of Food

Food Item	Cost/ 500g	Moisture content	Cost/100g dry weight
Washed, cut iceberg lettuce	\$3.00	95%	\$12.00
Shelled peanuts	\$3.00	10%	\$0.66
Honeycrip apples	\$2.00	80%	\$2.00

**US\$, Walmart**

# What is nutritious food?

# What is nutrient density?



# Nutrition is a new science

Isaac Newton's  
theory of gravity  
1687

Discovery date of specific vitamins

1910 – Vitamin B<sub>1</sub> (Thiamine)

1913 – Vitamin A

1920 – Vitamin C; Vitamin D; Vitamin B<sub>2</sub> (Riboflavin)

1922 – Vitamin E

1929 – Vitamin K<sub>1</sub>

1931 – Vitamin B<sub>5</sub> (Pantothenic acid)

1934 – Vitamin B<sub>6</sub> (Pyridoxine)

1936 – Vitamin B<sub>7</sub> (Biotin); Vitamin B<sub>3</sub> (Niacin)

1941 – Vitamin B<sub>9</sub> (Folic acid)

1948 – Vitamin B<sub>12</sub> (Cobalamins)

# Minerals – we are like plants

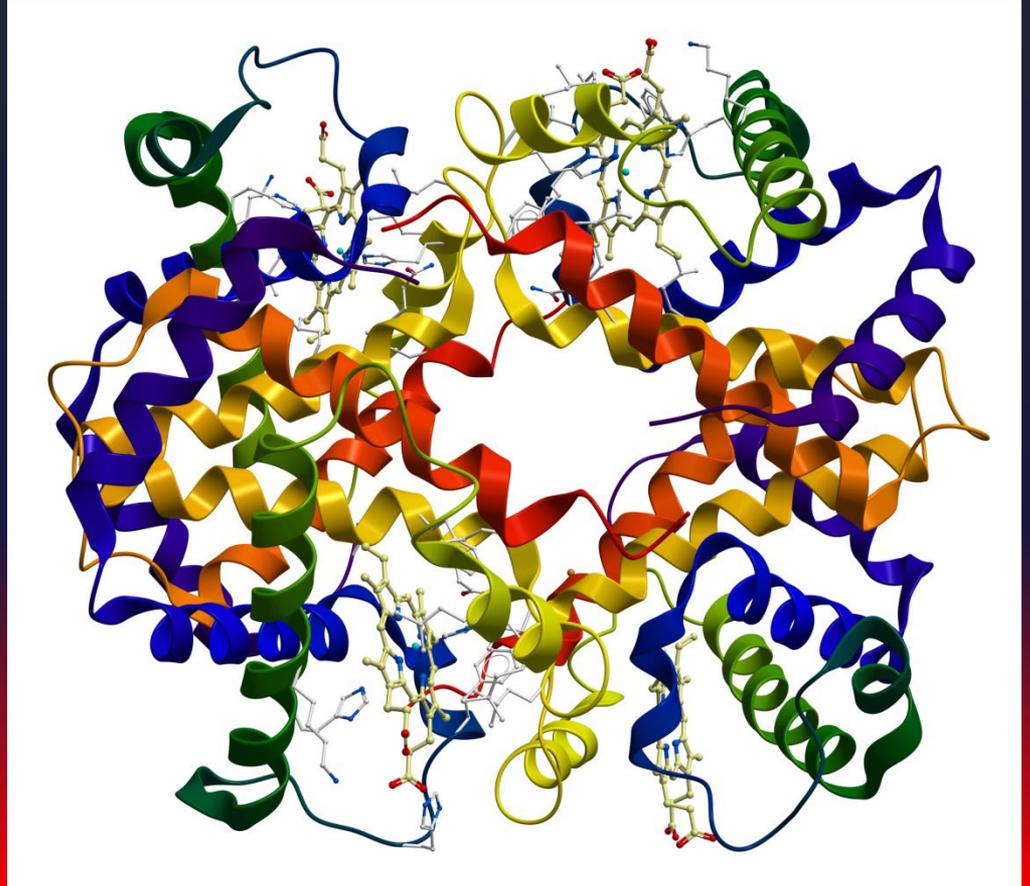
Phosphorus:

- DNA
- ATP



# Proteins & Amino Acids

20 amino acids  
9 are essential



# Phytonutrients

25,000 are known

eg antioxidants  
like anthocyanin



**What is nutritious food?**

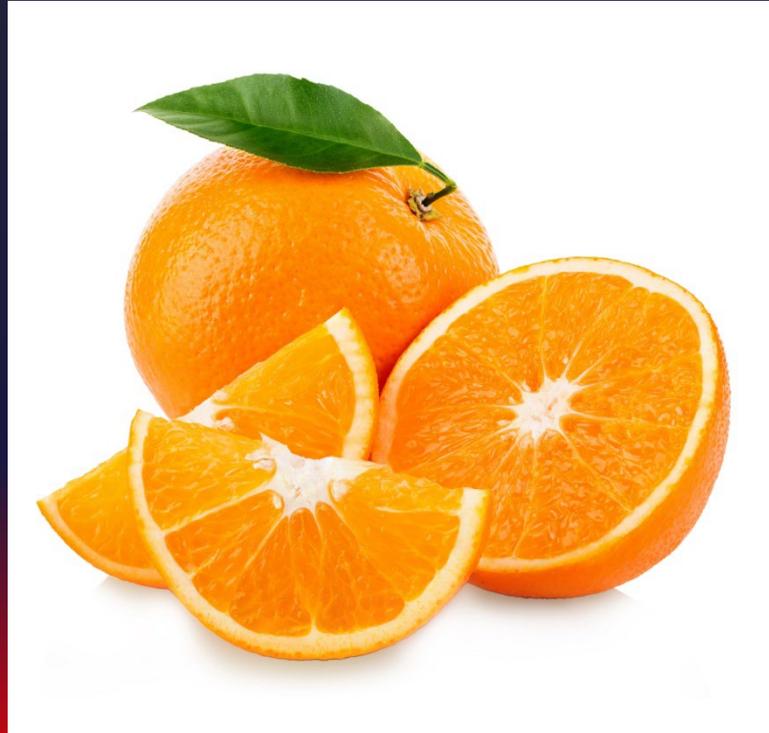
**What is nutrient density?**

nutrient density number?

# No accepted definition of nutrition!

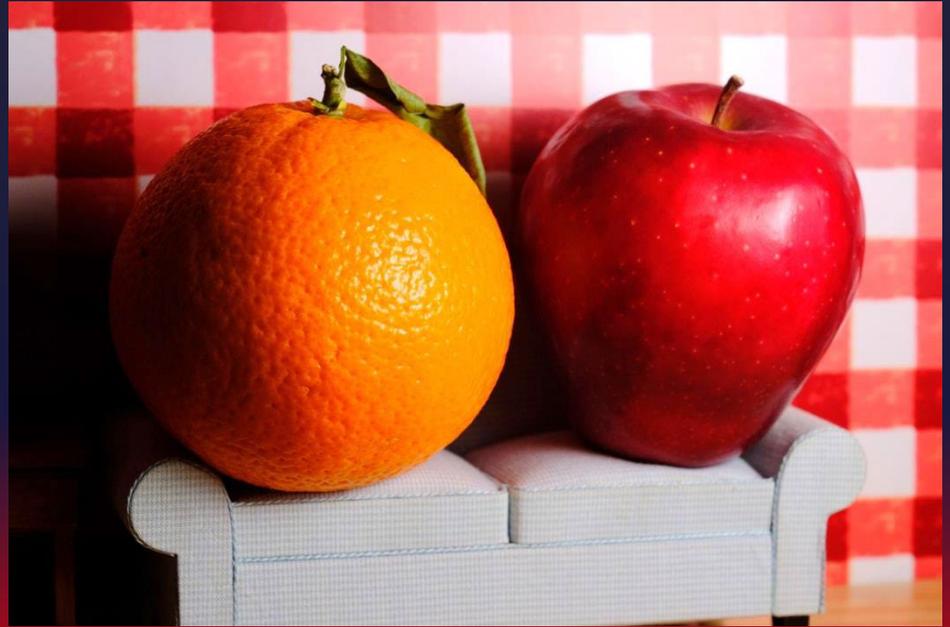
Do you need more?

guava, kiwi, peppers, broccoli  
and Brussels sprouts



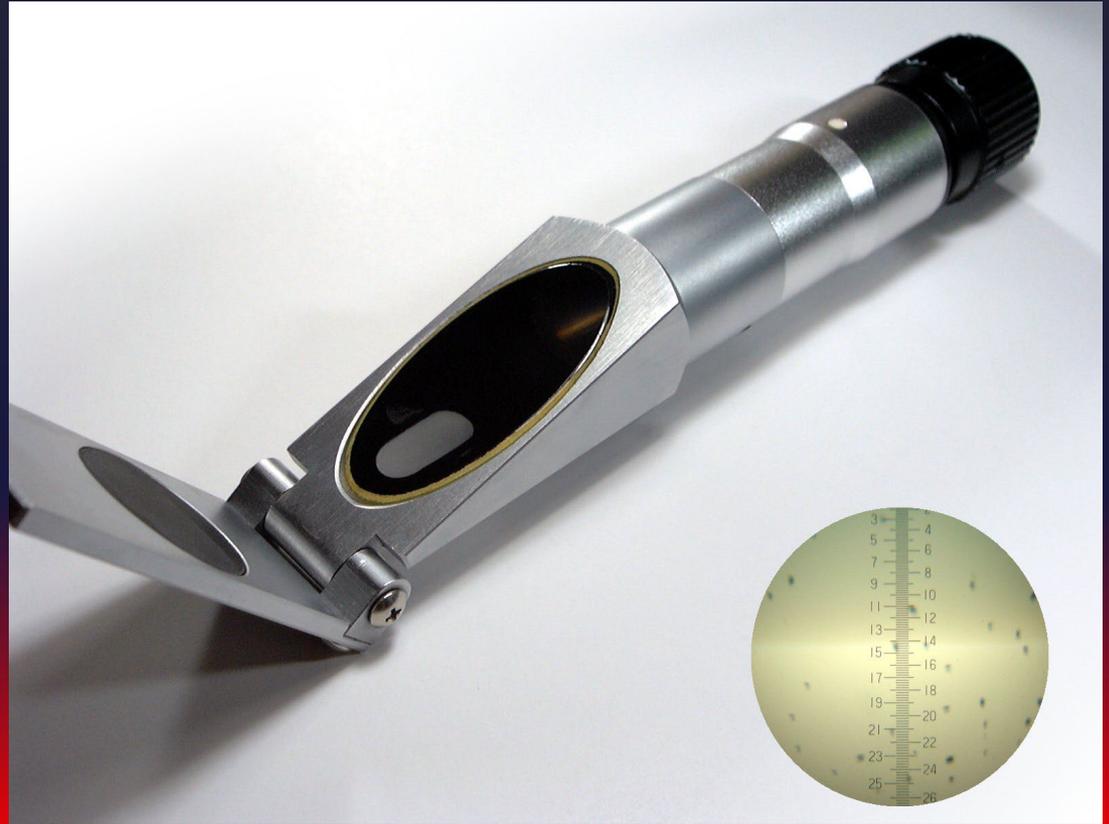
# No accepted definition of nutrition!

Which is better?



**Can we measure  
nutritious food?**

# Can we use Brix?



# Measuring nutrition

25,000 chemicals



# How to Grow Highly Nutritious Food?

# Low nutrient vs High nutrient?



Low



High

# Factors affecting nutrition

- Climate
- Soil
- Cultivar selection - genetics

# Is food less nutritious today?



# **What does science know?**

- Organic is not more nutritious**
- Heirlooms are not more nutritious**
- Cultivar selection is most important**

# **What does science know?**

- Increased fertilizer increases minerals and maybe other compounds**
- Much of the science on nutrient density is still unknown**

# Is GMO more nutritious?

'Purple'



# Is home grown more nutritious?

pick fresh



# Special fertilizers

- Vermicompost
- Kelp
- Fish emulsion
- Mycorrhizal fungi
- Special gardening techniques

**Harvest, Store, Cook**

# When is a fruit ripe?

what is a fruit?

ripe vs mature



# When is a fruit ripe?

what is a fruit?

ripe vs mature



# Storage: Cool is best for nutrition

fridge  
problems



# Myths: Frozen Food

- Kills bacteria and viruses
- Not as healthy as fresh
- No expiration date
- Can be thawed on the counter
- Refreezing is unsafe

# Solanine

- Potatoes, eggplant, tomatoes, ground cherries, peppers
- Cooking has limited effect
- Deep frying is best – 40% reduction
- Potato skins worst – fried: 1.5 mg/g, safe limit is 0.2 mg/g

# Boiling

- Lower temperature preserves nutrients
- Soluble vitamins lost to water
- Arsenic from rice
- Vitamin C degraded by boiling
- Vegetable water for plants

# Grilling/Barbecuing

- High temperature produces carcinogens
- Grill marks are not healthy to eat
- Great taste

# Food Myths

**Myth: Drink 8 glasses of  
water  
per day**



# Myth: Avoid total fat and saturated fat



# Myth: Honey is better than white sugar

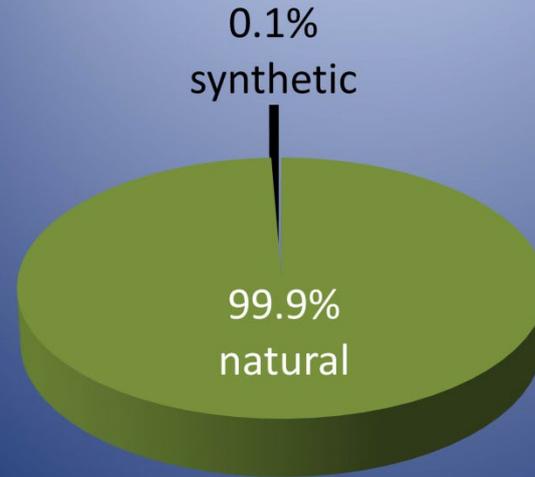


# Myth: Fresh fruits and vegetables are healthier



# Myth: Organic food does not contain pesticides

Amount of Pesticide Ingested



1500 mg/day

Data from Bruce N. Ames and Lois SwirskyGold ,1999

**Myth: Browning on an apple  
is toxic**



# Myth: Washing food with soap makes it safe



# Myth: I don't have pathogens in my garden



**Myth: Artificial flavors don't taste right because they contain too many chemicals**



Streptocarpus





# Garden Fundamentals

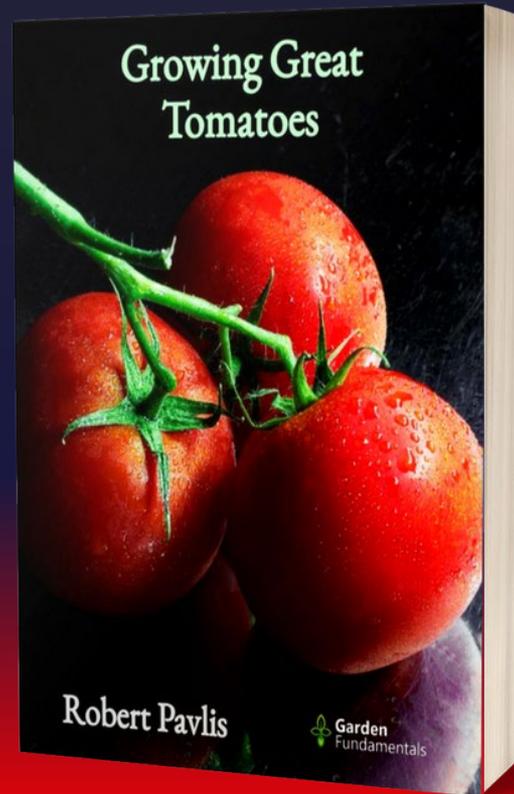


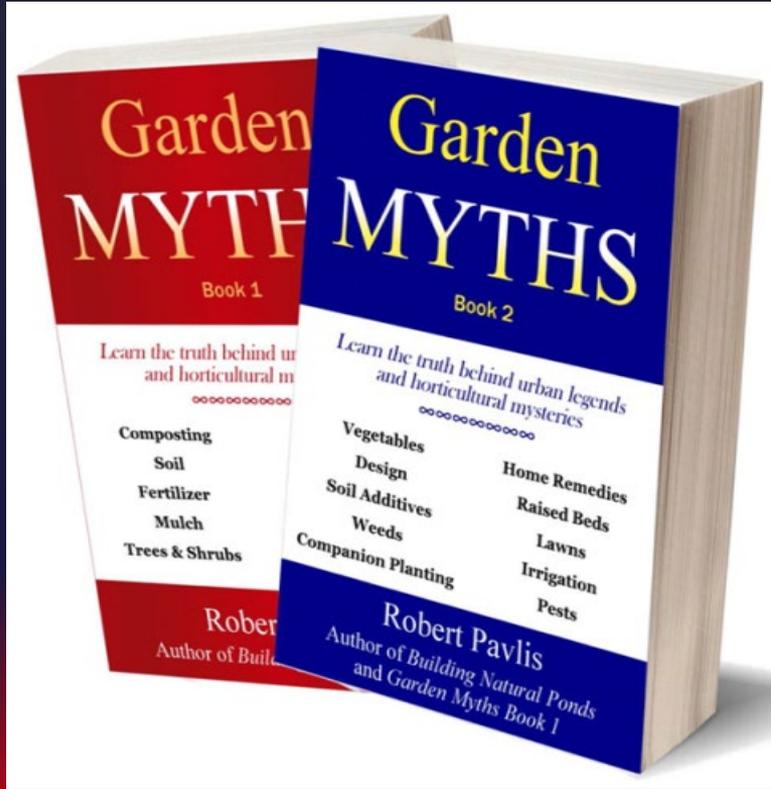
# GardenMyths.com



30+ gardening talks

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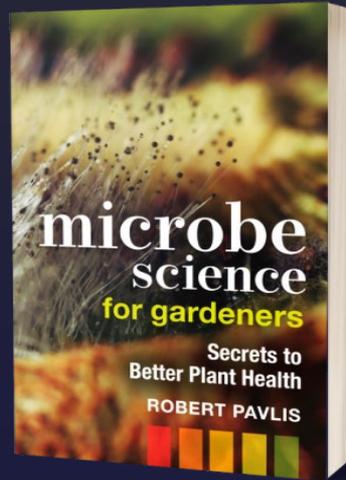
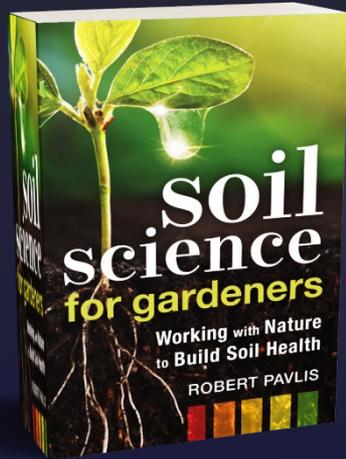
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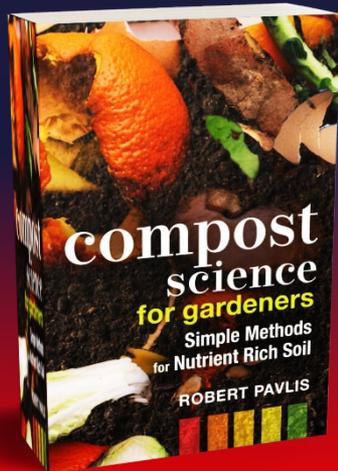
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