



Home Economics Careers and
Technology (HECT)
Professional Development
Webinar

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Urban Farming
Enhancing the
HECT Curriculum
by
John Matthesen &
Marian Woodard

November 17, 2016



Backgrounds for Marian and John

- **John and Marian** are both veterans of the Silicon Valley veteran high-tech industry. Working all over the world, they have extensive experience in teaching and training, course design and presentations.
- **John** currently consults for the governments of Mexico, Germany, Austria and Uruguay, and is VP of Engineering for a software company in Mexico.
- **John** is also a mentor at UC Berkeley-Haas, and a professor at Diablo Valley College Culinary Department, where he teaches courses on Farm-to-Table and Sustainable Hospitality at his urban farm.
- **Marian** is a graduate of UCCE Master Gardener program, RecycleSmart's Master Composter program and the Permaculture Design Institute.
- **Marian** is a composting instructor for RecycleSmart, an instructor with Sustainable Contra Costa, and Garden Educator for El Monte Elementary.
- In 2012, John and Marian started an urban farm in Pleasant Hill as a way to experience agriculture first hand.

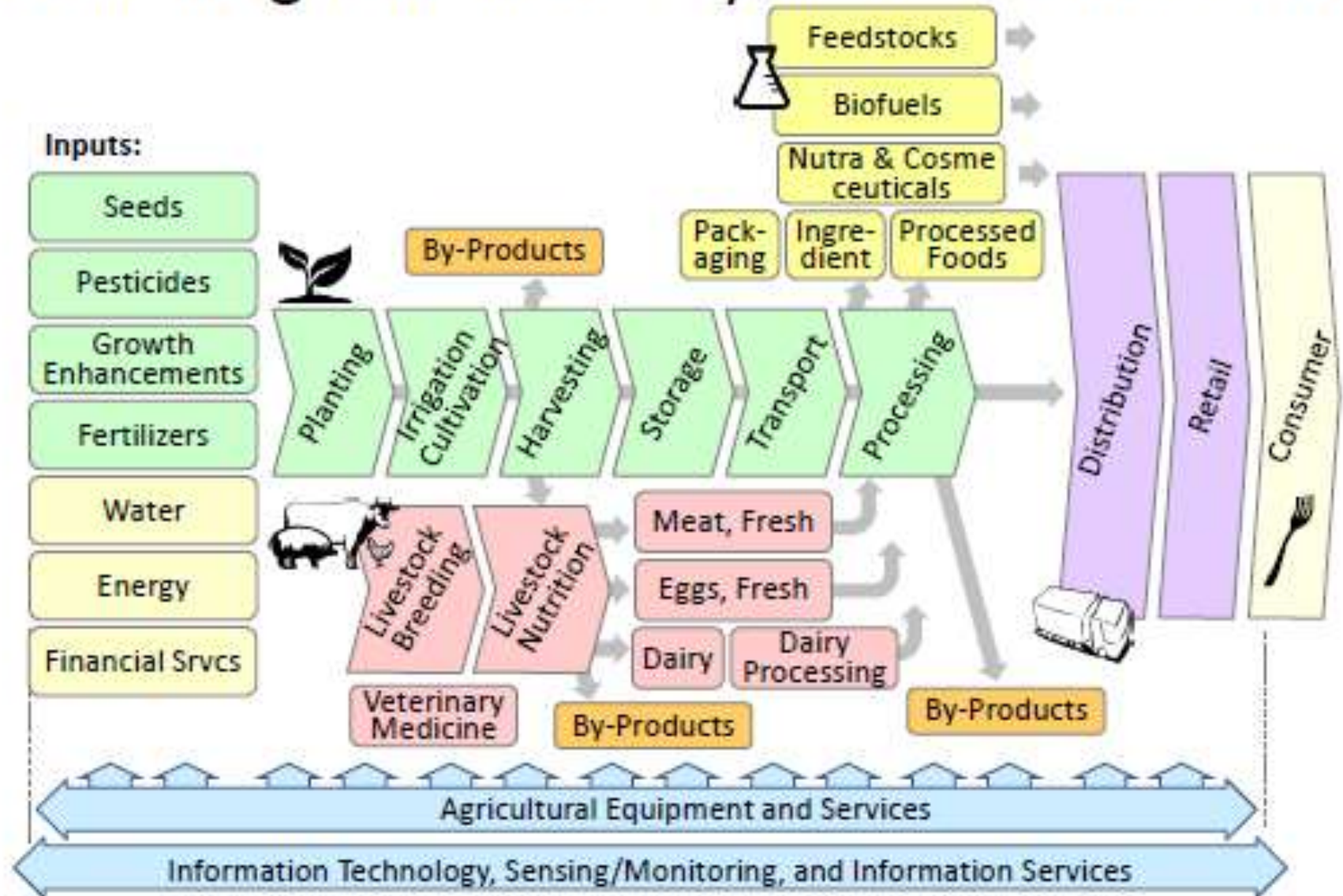
Why Teach About Agriculture and Food?

- Everyone is sad about polar bears and glaciers and penguins
- We always hear:
 - Too many people
 - Not enough land, not enough water, not enough food
- But around *us* all we see is food and abundance
- We hear from many students that they can't relate
- It's easier to show and feel than to learn statistics, plus students learn more when it's fun, tasty and kinesthetic
- Lessons from urban farms *are* applicable to the classroom
 - Next Generation Science Standards, STEM, Common Core
- Kids and adults are getting fatter and sicker
 - Bad diet and physical inactivity are leading causes of death in USA

More Benefits of Learning About Gardening

- It's great physical activity + fresh air
 - Community and collaboration
 - Research:
<http://www.motherearthnews.com/print?printid={37166771-437E-40D5-B460-C6665D8B2028}>
 - Contact with live plants reduces stress
 - Contact with nature improves health and brain function
- It's also about jobs and business
 - Investments and jobs in AgTech and FoodTech are increasing
 - Witness rise of meal kit delivery services
 - www.GoodFoodJobs.com

Global Agriculture Ecosystem – Farm to Fork





GOOD FOOD JOBS

FIND A JOB

get
email
alerts

SEARCH FOR JOBS
34,159 Jobs Posted

farm

enter city or zip code

search by region

NEED HELP?

refine search

LOCATION

to search by radius,
enter a zip code in the
search box above

- ☐ 60 mile radius
- ☒ 30 mile radius
- ☐ 15 mile radius
- ☐ outside of U.S.
- ☐ work remotely
- ☒ everywhere
- ☐ work visa

now viewing results for farm

1-50 of 301

1 2 3 4 5 >

new

PASTRY CHEF

FULL-TIME
Boston, MA

NOV 17, 2016

Island Creek Oyster Bar, Row 34

Island Creek Oyster Bar is a fine dining restaurant celebrating the farmer and fisherman. The daily changing menu is a collaboration, bringing farmer, chef, and diner in one space....

new

LEAD GROWER

FULL-TIME
Floyd, VA

NOV 17, 2016

Riverstone Organic Farm

Riverstone Organic Farm is a certified organic vegetable and livestock farm in the Blue Ridge mountains of Virginia. Located only 2 miles from the Blue Ridge Parkway, it is a desti...

Using Urban Farm Techniques in the Classroom

- Sustainability
 - We all know the word, and we understand the idea, but what does it have to do with me?
 - Let's look closer to ourselves, and see what's in our immediate environment, upstream and downstream
- Some places to look - *schoolyard*
 - Soil
 - Insects
 - Worms
 - Weeds
 - Mushrooms
 - Rain water



What Can We Learn From Urban Farms?

- Urban Farms vs Industrial Agriculture
 - Small farms can do things differently than big farms with greater yields per square foot. Singing Frogs Farm
 - In home and school gardens, the smaller the area, the larger the yield percentage can be. Watch Angelo Eliades:
<https://deepgreenpermaculture.com/2015/06/04/companion-planting-in-a-small-productive-urban-garden-video-by-sustainable-gardening-australia/>
- Industrial Ag
 - Acres and acres of the same thing pillar to post
 - A beacon for insects and pathogens
 - The vicious cycle of pesticides and fertilizers
 - No nutrition left in the soil
 - Astounding water pollution - Iowa
 - NOT sustainable



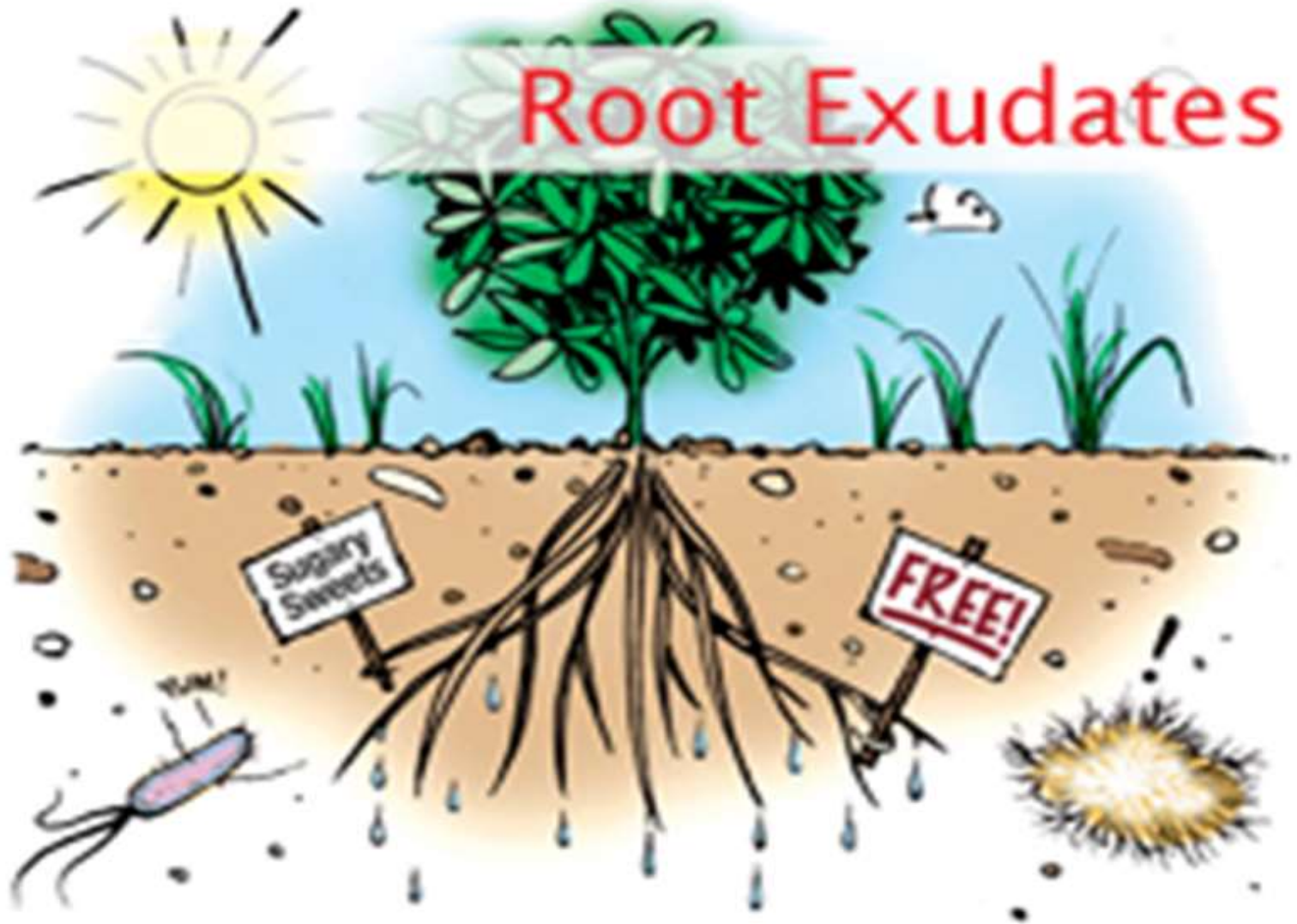
← Big Ag

Singing Frogs Farm →

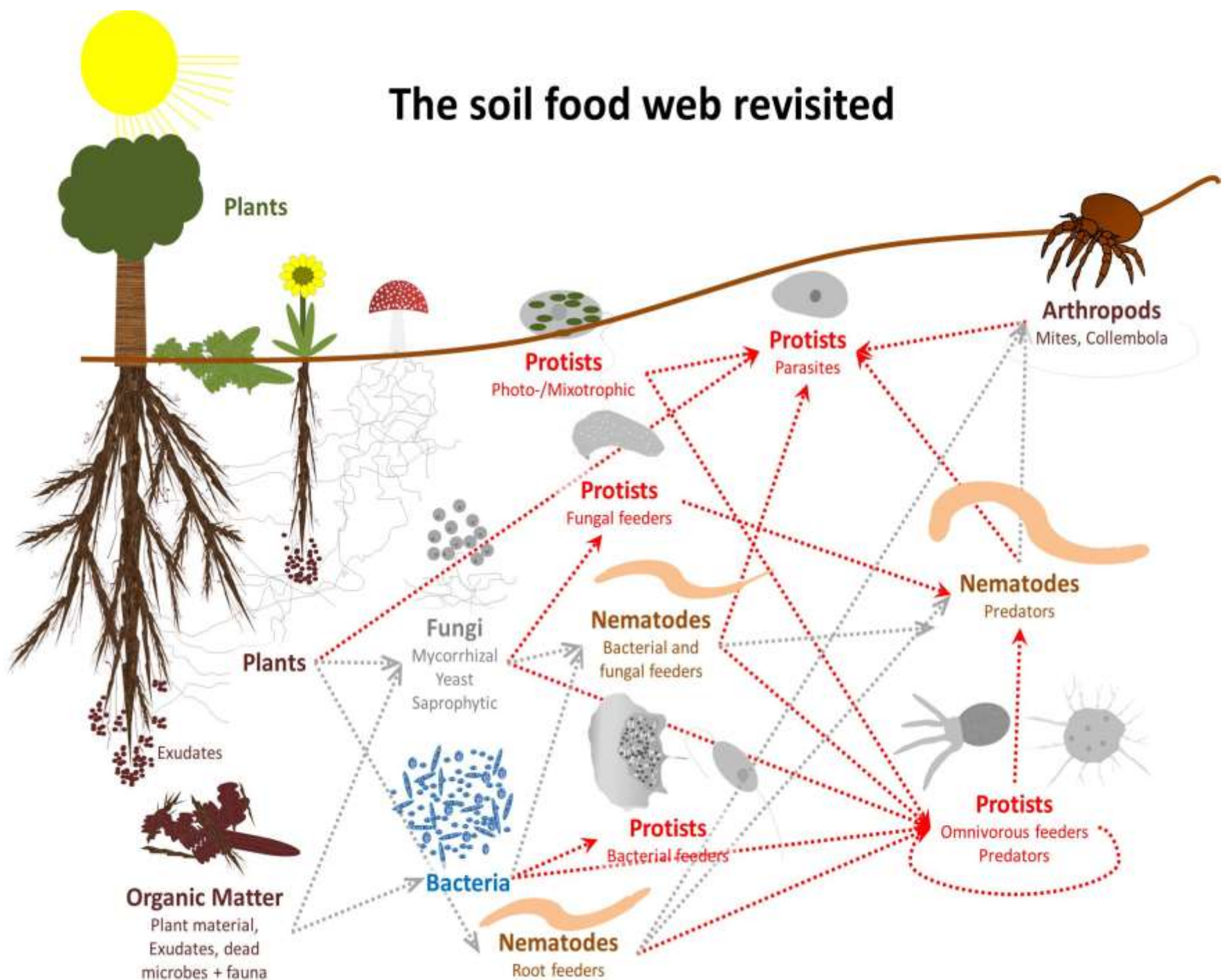


Some Plant Basics

- Photosynthesis, roots and critters



The soil food web revisited



Urban Myths

- Bacteria is the enemy, right?
 - Antibacterial soaps
 - Without bacteria, plants and humans could not live
 - *Anxiety and depression relief: actinobacteria*
- Feed the Plants
 - No, feed the SOIL
 - Synthetic fertilizer is like supersized McDonald's for plants

ORGANIC *fertilizers*

feed the soil
and the plant

PLANT NUTRIENTS

ORGANIC MATTER

MICRO-ORGANISMS

SOIL NUTRIENTS

TRADITIONAL *fertilizers*

feed only the plant
and damage the soil

PLANT NUTRIENTS

JOHNANDBOBS.COM



Soil Depth (m)

0

1

2



Wild Prairie Perennial Wheat

Perennializing grain production will address critical problems in industrial agriculture, such as soil erosion, water shortages, biodiversity loss, dependence on inputs (fertilizers and pesticides, etc.) and green house gas emissions.



Annual winter wheat

Perennial wheatgrass



This is a simple pine seedling

Plants are like icebergs:

Most action is below the surface!

Bacteria & Fungi All Around Us

- How can we understand that soil is full of bacteria?
 - You can't see them
 - But we can show very clearly they are there
- Compost exercise
 - Assemble the correct ingredients (just like baking a cake!)
 - 10 buckets of ingredients
 - Each ingredient is cold or room temperature
 - But when combined – heat!
 - What makes the heat?
 - Bacteria and Fungi!
 - It takes nature 1,000 years to build an inch of topsoil; we can do it in under 9 months. *And we must.*



Many Lessons using Compost

- Ingredients for compost
 - Take a trip to a local grocery store
 - Look in the dumpster (or ask to see what they toss out)
 - Walk around your school – leaves, landscape residue, paper towels, newspapers
- Is there enough food?
 - In the USA, 40% of everything we grow is thrown away
 - John Oliver on Food Waste (2015):
<https://www.youtube.com/watch?v=i8xwLWb0ILY>
 - Go to your school cafeteria
 - Get the scraps and use for compost
 - Compost takes “waste” and makes new life

Food Waste: Last Week Tonight with John Oliver (HBO)



<https://www.youtube.com/watch?v=i8xwLWb0ILY>

Keyhole Beds

Compost bin goes in
the middle



Herb Spirals

- Simple, ancient design
- Uses the concept of a Fibonacci curve (nautilus shell)
- Fill top 10" with good soil and *compost*
- Plant herbs and insect-friendly plants







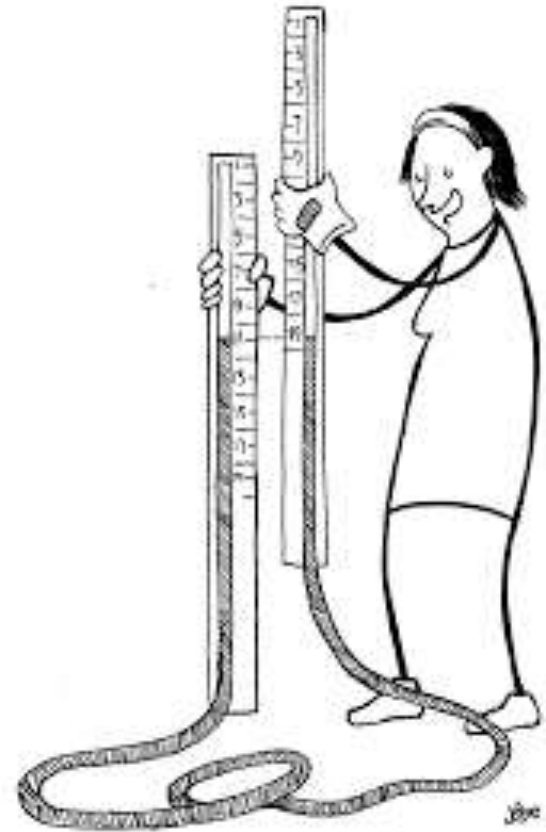






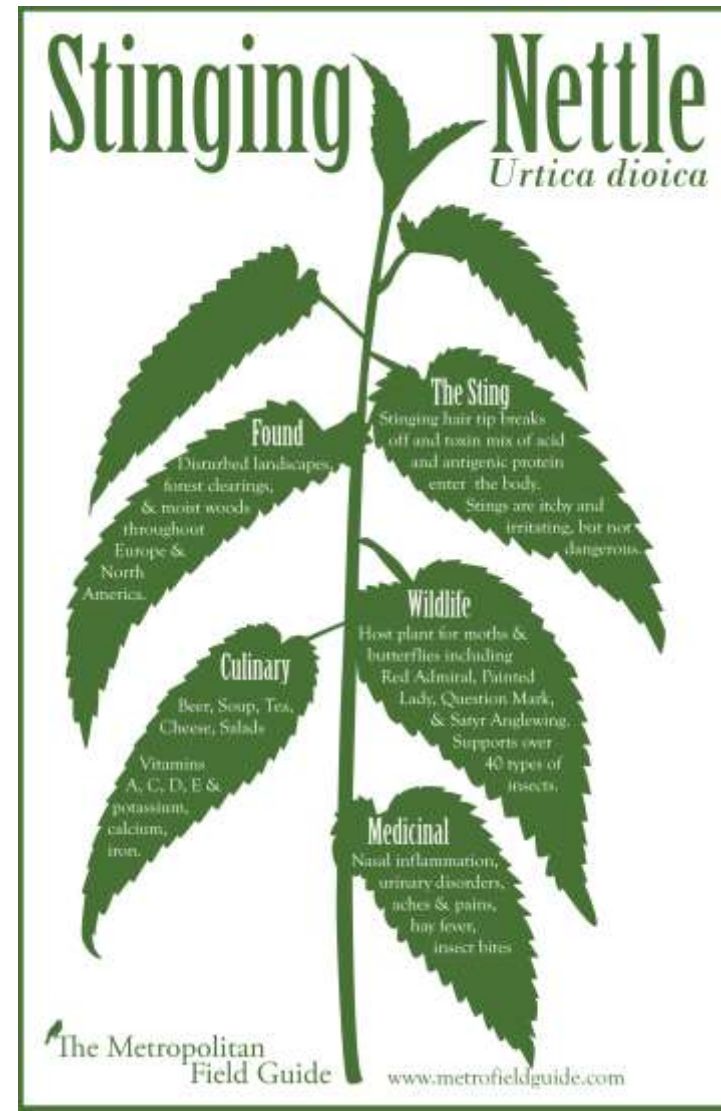
Rain Catchment

- Yes off of roofs, but also
- SWALES – trenches on contour using A-Frames or bunyips



Rethinking Our Urban Environment

- Weeds!
 - What are they and why do we have them?
 - Are they edible?
- “Nuisance” plants
 - Dandelions
 - Stinging Nettles



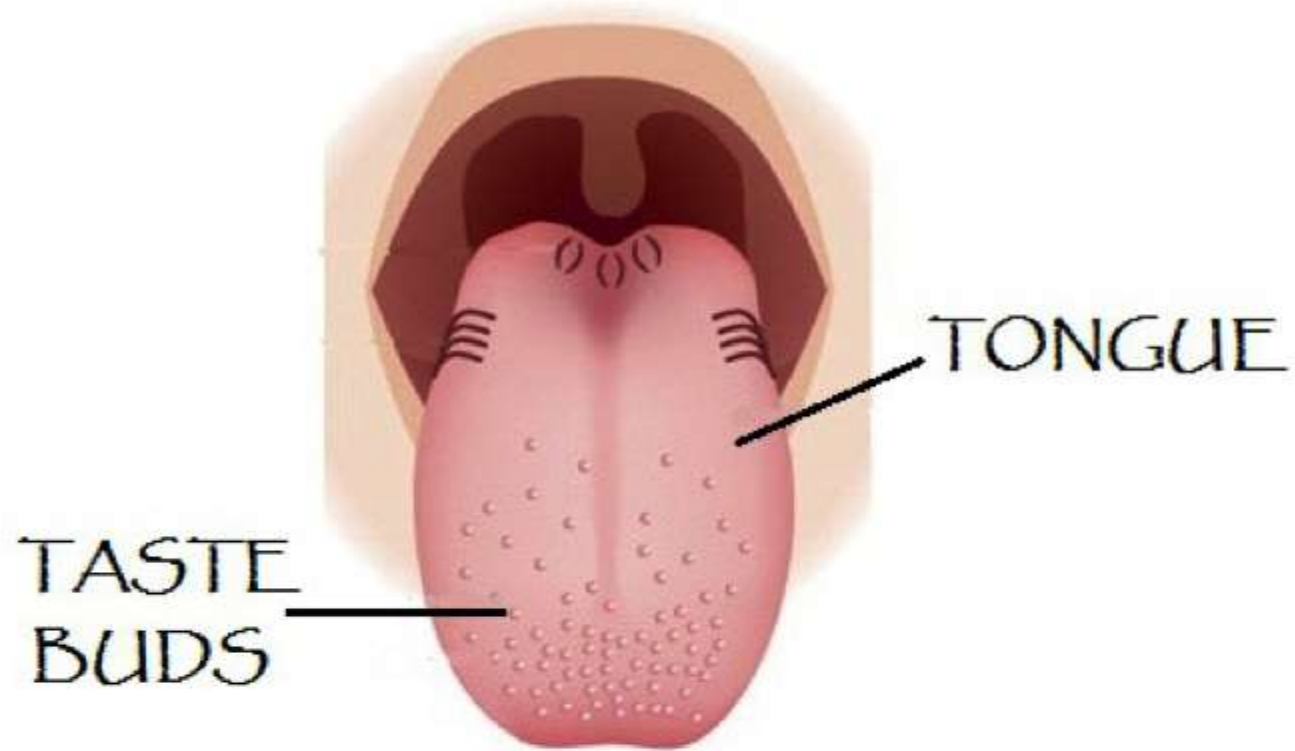




But Wait ... There's More !

- Honeybees
 - Tons to know
 - Main point – *Don't Be Afraid !*
- Mushrooms
 - Remediation of land and water
 - and likely BEES
 - Mushrooms taste good!





SWEET



SALTY



SOUR



BITTER



UMAMI



Mushrooms are Keys to Flavor

- The umami test
 - Taste 3 broths:
 - No salt
 - With salt
 - With salt and MSG
- MSG – the myth
 - Have your class look up glutamates
- Take-away
 - Not everything you've been taught is true

Spicing It Up

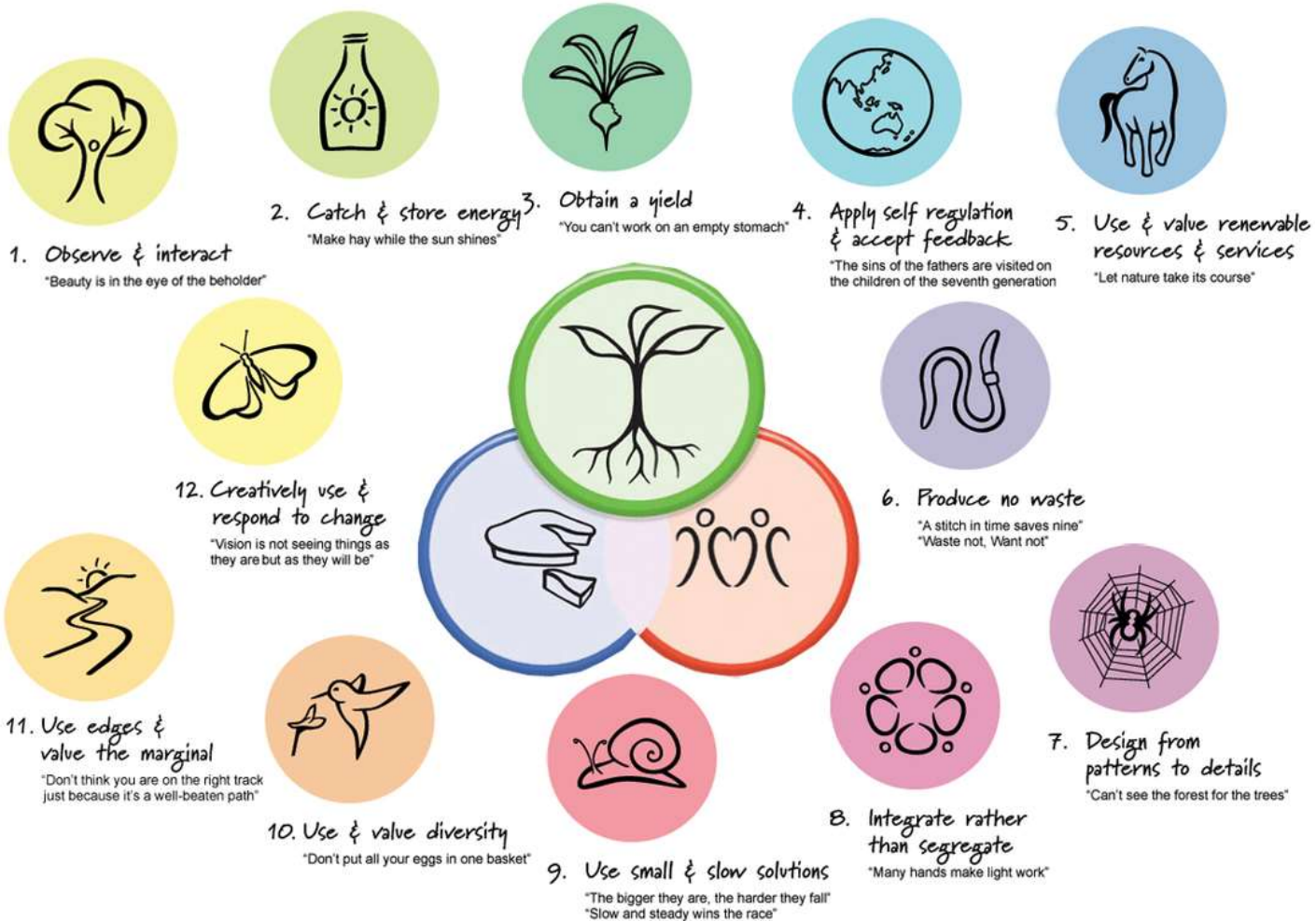
- Another “fact”
 - What’s the hottest part of a spicy pepper?
 - 99% of people will tell you it’s the seeds
- Try it out
 - Put spicy pepper flesh on different parts of your tongue
- Grow some peppers
 - Easy
 - Pest resistant
 - Hundreds of varieties

Crop Suggestions

- Cool Season
 - Lettuces, chard and mustards
 - Radishes, carrots, potatoes
 - Choy
 - Fava beans
- Warm Season
 - Quinoa
 - Peppers
 - Cow Peas
 - Okra
 - Corn/Beans/Squash
- Anytime Inside
 - Microgreens! Year-Round Indoor Salad Gardening, Peter Burke

Whole Systems Living

- Permaculture
 - A way of thinking, designing and implementing sustainability locally
 - Observing, mimicking and working with Nature



Life Lessons

- Students learn the *Rule of the Farm* – they have to plan, cultivate, problem-solve, be patient and harvest on *Nature's* timeline
- They'll taste what they grow
- They use their hands, head and body consciously
- They gain self-confidence and respect
- They become more comfortable in natural surroundings
- They learn to work together



Transformation Happens Regularly



Resources

- Compost
 - <http://www.planetnatural.com/composting-101/how-it-works/>
- Worms
 - <http://www.working-worms.com/content/view/40/>
- IPM (Integrated Pest Management)
 - <http://www.ipm.ucdavis.edu/>
- Soil Food Web / Dr. Elaine Ingham
 - http://soilfoodweb.com/thermal_compost
- General topics by video
 - www.groworganic.com
- Excellent podcasts
 - www.permaculturevoices.com
- Permaculture info
 - www.geofflawton.com
- Low-cost supplies
 - www.greenhousemegastore.com
- Great articles
 - www.modernfarmer.com

Reading List

- The Sustainable Vegetable Garden
 - John Jeavons
- How to Grow More Vegetables
 - John Jeavons
- The Soil Will Save Us
 - Kristin Ohlson
- Eating on the Wild Side
 - Jo Robinson
- Folks This Ain't Normal
 - Joel Salatin
- Omnivore's Dilemma
 - Michael Pollan
- Gaia's Garden
 - Toby Hemenway
- 3rd Plate
 - Dan Barber
- The Transformation of American Agriculture
 - Kathy Browzer
- Salt Sugar Fat
 - Michael Moss

