WaterSmart Gardens: Converting Thirsty Lawns to Beautiful Beds
Efficient Use of Water – It’s in Our Hands – Today...

- Inside Presentations
- Outside Demonstrations
- Instructors & Topics
  - Nicolai Laquaglia – Soil health, compost & mulch
  - Eric Zemlicka – Lawn removal methods, efficient irrigation, converting sprinklers to low-volume drip
  - Cheryl Buckwalter – Selecting, grouping, placing, & establishing climate-appropriate plants
Presentations & Resources at www.ecolandscape.org
Grow Your Soil!

Nicolai Laquaglia CLIA

EcoLandscaper™
UCCE Master Gardener
Qualified Green Gardener
Sustainable Landscape Expert
Owner of asustainablegarden.com

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Soil is a Population...

“Dirt is what we find under our fingernails”
Over time we have visualized soil as a “medium”
Most of our landscapes are grown on sub-soil
Microbes and worms “rehabilitate” their environment
Re-create the conditions and regain the top soil
Think of soil as a population and protect it
Healthy, vital soil will make all other garden challenges easier or reduced
Beneficial Microbes Make Happy Plants
Nurture the soil and it will nurture...

- Healthy soil works hard to build you a healthy landscape

- Plants form sugars (carbohydrates)
  - pushes them to roots feeds mycorrhizae and other microbes

- Mycorrhizae
  - Unlocks nutrients so plant roots can absorb them

Soil biology directly impacts:

- Rates of erosion, run-off, sedimentation, compaction, drought hardiness, water quality, plant fertility
MULCH AND COMPOST

3 Main Points

- **Mulch and Compost** – essential to a sustainable ‘Green’ landscape
  - Perhaps the most important element of sustainable gardening
- **Compost** – *fully decomposed* organic soil amendment
  - Replaces organic matter, nutrients, microbial population
- **Mulch** – *un-decomposed*, goes on top of soil
  - Controls weeds, conserves moisture, moderates soil temperature

Recycling plant trimmings into mulch and compost will make healthier plants with fewer pests.

*These and will save water, money, and time...*
What is happening in soil?

“Soil” – mix of minerals, organic matter, living organisms, and air space

- Soil texture – relative proportions of particle size, affects nutrient retention
- Soil structure – arrangement of aggregates into groupings, indicator of soil “tilth”

Compost and Mulch

- Encourages beneficial organisms...
- Suppress soil borne diseases, pathogens

Chemical fertilizers, pesticides, and herbicides suppress beneficial microbe populations
Good Compost?

- 5% of top soil
- Constantly used by soil inhabitants
- Quality of compost – “finished”, smells clean
  - Earthy, no ammonia smell
  - Not hot/steaming
  - Fully decomposed, doesn’t resemble original plant material
  - No sawdust
- Bagged or bulk...$...find a source
- Peat Moss?
  - Not renewable, imported, tough on environment

Make your own!
Elements of a Compost Pile

Equal parts by volume:
  - Carbon
  - Nitrogen

Add water 40% (wrung out sponge)
Twist and blend material to mix and leave air spaces
Compost Quality

- EVALUATION TOOLS?
  - Sight
  - Smell
  - Feel
  - Taste?
- If you can tell what it started as...
- If it doesn’t smell like earth...
- If it doesn’t feel earthy and spongy, don’t mix in soil (it’s not composted)
What do you add?

Carbon (brown)
• Twigs and leaves
• Egg shells
• Coffee grounds
• Hair
• Newspaper and cardboard

Nitrogen (green)
• Kitchen scraps
• Yard and grass clippings
• Manures
• Alfalfa bales or pellets
More Compost Questions...

- What should I not compost?
  - Anything with fat or oil, bones, manure from dogs or cats or any meat eating animal, hair that is chemically treated

- For a “hot” pile: you mix thoroughly and wet 40% or consistency of a wrung out sponge *one cubic yard minimum

- What is “hot” compost?
  - A pile that reaches temperatures to mitigate most weed seeds and pathogens (131° to 160°)

- How much brown and green?
  - About 50/50 by volume

- Can I just layer the brown and green?
  - Yes, but that would be “cold” compost
Composting can be traced as far back as Marcus Cato, a farmer and statesman from Rome, Italy 2,200 years ago. He reported the virtues of compost for enhancing agricultural productivity, stating that all food and animal wastes should be composted and returned to the soil.

In the United States, George Washington was an avid composter who designed a building specifically for that purpose on his farm in Mount Vernon, Virginia. By the 19th century, composting was commonly practiced to restore organic matter to soils.
Mulch

- What is MULCH?
- What does mulch do?
  - Suppresses weeds
  - Conserves moisture
  - Moderates soil temperature
  - Prevents compaction
  - Controls Erosion

Nature does not like bare soil, either you cover it with mulch or it will be covered with weeds!
Weeds of the Valley
Soil structure benefits greatly by microbes promoted by mulching and distributed by compost

- Mulch and Compost are pro-biotic...encourage life
- Suppressing beneficials allows pathogens to over-populate and attack soil microbes and plants
- Some beneficial microbes produce an antibiotic that suppresses pathogens
- Beneficials compete with and balance out pests
Some new “friends” in the garden...
Mulch Nurtures the Soil
Two primary considerations:

Application Area: 6” from trunks, 2” from buildings

Application Depth:
3” to 4“ thick in close plant spacing
4” to 6” thick in open plant spacing
Replenish mulch...

- Replenish mulch yearly to keep up depth
- Allow leaves from trees and plants to drop where they are
  - Creates new coat of mulch
  - Plants leaves are the best for replacing nutrients
  - Sprinkle or “veneer” fresh mulch on top
  - Sprinkle compost for a boost around plants
Worm castings—concentrated, plant ready and soil renewing...

Mulch attracts worms

*Worms move 56 tons per acre of healthy soil per year...*

- Mulch worms “Eisenia fetida”…red wigglers
  - Live in top of soil profile
  - Convert mulch to castings

- The worms in the top 6’ feet of soil are “Lumbricus terrestris”…night crawlers
  - Live vertically in “chimney” like tunnels
  - Mix soil from bottom of tube with mulch from above tube
  - Channels allow air and water to move through soil
What do you use your lawn for?
Why replace the turf?

40 million acres
- Largest irrigated crop in U.S.
- Size of Washington or Florida

2 Trillion gallons of water/year
- Fill the “Rose Bowl” 35,555 times
- 100 million tons of fertilizer
- 80 million lbs of pesticide
- 600 million gallons of gas
- 17 million gallons of gas spilled/lawn equipment
Sustainable is Beautiful
Thank you and spread the word...