PERMACULTURE AND ECO-FRIENDLY GARDENING

Dianne Kadonaga, Sunny Glen Garden

Yavapai Master Gardeners, 10/28/21
An estimated **1.8 BILLION** milkweed plants are needed to enable the eastern monarch butterfly population to bounce back!
NATIVE PERENNIAL PLANTS FOR NATIVE BEES

• ENHANCE BEAUTY
• POLLINATOR HABITAT
• SUPPORT BIRDS
• INCREASES BIODIVERSITY
  NATIVE TO THE AREA
• CAN BE EASILY
  INCORPORATED
• REQUIRES LITTLE CARE ONCE
  ESTABLISHED
ORIGINS OF PERMACULTURE

https://native-land.ca/
FIRST YEAR GARDEN 2015
WHAT IS PERMACULTURE?

Principles of Permaculture:

- Care of People
- Care of the Earth
- Fair Distribution of Surplus

“EarthCare, PeopleCare, FairShare, LimitsAware”

Definitions of Permaculture:

- Designing synergistic assemblies of plants, animals, and structures that serve human needs but adhere to nature’s logic.

- A design system for sustainable living and land use.
PERMACULTURE
PRINCIPLES
OR GUIDELINES

• Observe and interact with the land
• Connect and integrate the pieces
• Catch and store energy and materials
• Each component performs multiple functions
• Use small scale, intensive systems
• Apply self-regulation and accept feedback
• Obtain a yield
• Use and value renewable resources and services
• Produce no waste
• Design from patterns to details
• Integrate rather than segregate
• Use small and slow solutions
• Use and value diversity
• Use edges and value the marginal
• Creatively use and respond to change
Yoga & Meditation
MORE GREENS PLEASE!
### WHY EAT ORGANIC FOOD?

#### Organic Produce vs. Conventional Produce

<table>
<thead>
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<th>Vegetable</th>
<th>Total Mineral Ash</th>
<th>Phosphorous</th>
<th>Calcium</th>
<th>Magnesium</th>
<th>Potassium</th>
<th>Sodium</th>
<th>Boron</th>
<th>Manganese</th>
<th>Iron</th>
<th>Copper</th>
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<td><strong>Tomatoes</strong></td>
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### ORGANIC VS CONVENTIONAL FARMING

<table>
<thead>
<tr>
<th>ORGANIC</th>
<th>CONVENTIONAL</th>
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<tbody>
<tr>
<td>Crop rotation</td>
<td>Synthetic fertilizers</td>
</tr>
<tr>
<td>Green manure</td>
<td>Pesticides</td>
</tr>
<tr>
<td>Compost</td>
<td>Hormones</td>
</tr>
<tr>
<td>Biological pest control</td>
<td>Livestock antibiotics &amp; food additives</td>
</tr>
</tbody>
</table>
SUPPORT ORGANIC GROWERS

• Farmers Markets

• Support organic growers

• Buying local supports the local economy

• Get to know your farmers and how they grow the food
FOODBABE.COM
AND THE FOOD BABE ARMY
GINGER

TURMERIC

SAFFRON
PACKAGING & PLASTICS
The average American produces 1,600 pounds of trash every year!

What’s in your garbage can?

Can you make one different choice that is more environmentally friendly?
VIEW FROM SECOND HIGHEST POINT IN FRANKLIN COUNTY

From the mountain of our garbage at the Franklin County Landfill

We produce 1,100,000 TONS per year!!!

tours@swaco.org

To schedule a tour of Prescott transfer station, contact:
brady.higgs@prescott-az.gov
THE TRUTH ABOUT RECYCLING
Plastic clamshells like these are NOT recyclable.
Know what can and what cannot go into recycling

**RECYCLABLE**

- Aluminum: Aluminum cans, pie plates, frozen dinner pans, foil & food containers
- Metal: Steel food cans, metal lids, EMP-TY aerosol cans, wire clothes hangers
- Newspaper, Paper, Junk Mail
- Self-sealing & window envelopes
- Magazines: Glue bound & stapled magazines. No paperback or hardbound books
- Chipboard: Packaging or facial tissue boxes, dry food boxes such as cereal, cake mixes (remove liners), shoe and gift boxes
- Cardboard: Flattened, corrugated and clean
- Plastics: all number 1 through 7 plastics (the number is on the bottom or side of the container). Remove and throw away all lids.

**No plastic grocery bags. No Styrofoam.**

**NON-RECYCLABLE**

- Plastic bags
- Styrofoam
- Grass, yard &/or food waste
- Glass
- Unrecyclable caps & lids
- Paper Napkins/Plates/Cups
- Electronics
- Concrete, Wood
- Clothing
- Textiles, Carpet
- Hoses, Extension Cords
- Paperback or Hardbound Books
- Medical tubes
- Diapers
- Animal food bags
- Rubber products

**No garbage bags allowed in recycle bins.**

**Empty recyclables and throw garbage bags in the trash bins.**
Home made coconut chips or flakes

Garden Popcorn with herbs

Home made crackers from leftover almond pulp with garden herbs

Garden Popcorn with herbs
MULTI-USE ITEMS
LIFESTYLE CHOICES
LIFE WITHOUT A CAR

Water wagon
Bale buggy
Honey hauler
Tulsi truck
Tomato Trolley
LAWNS

- 63,000 square miles of turf grass in the USA
- Single largest irrigated agricultural “crop” in America
- Consumes 50-75% of a residence’s water
- Americans spend $36 billion every year on lawn maintenance
NOISE POLLUTION

Normal conversation ~ 60 dB
Lawn mower ~ 90 dB
Rock concert ~ 120 dB

Hazardous > 85 dB
LAWN MOWERS & POLLUTION

- 800 million gallons of gas per year are used to mow lawns
- Every year 17 million gallons of gas is spilled while refueling lawn equipment
- Gas mowers represent 5% of U.S. air pollution
- One gasoline powered lawn mower emits about 106 pounds of greenhouse gas in one season

40 cars
ECO-FRIENDLY LAWNMOWERS ARE MORE FUN!
GARDEN-BASED FITNESS

TRICEPS  FOREARM  CHEST

BICEPS  LEGS  BACK  SHOULDERS
EDIBLE FOOD FOREST LAYERS

1 Canopy
2 Sub-Canopy
3 Shrub
4 Bush
5 Grass
6 Herbaceous
7 Ground Cover
8 Rhizosphere
9 Climbers & Vines
10 Water plants
Three Sisters Guild
<table>
<thead>
<tr>
<th>FOREST LEVEL</th>
<th>EDIBLE PERENNIALS</th>
<th>PERENNIAL VEGETABLES</th>
<th>EDIBLE ANNUALS</th>
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</thead>
<tbody>
<tr>
<td>CANOPY</td>
<td>Pin Oak</td>
<td></td>
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</tr>
<tr>
<td>SUB-CANOPY</td>
<td>Chinese Chestnut, Green Apple</td>
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<tr>
<td>SHRUB</td>
<td>Hazel, Elderberry</td>
<td></td>
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</tr>
<tr>
<td>BUSH</td>
<td>Red &amp; Black Raspberries, Currants &amp; Gooseberries, Goji Berries, Blueberries</td>
<td>Artichoke, Rhubarb, Asparagus</td>
<td>Sunflowers, Corn, (Cotton)</td>
</tr>
<tr>
<td>GRASS</td>
<td>Crocus (Saffron)</td>
<td></td>
<td>Lemongrass</td>
</tr>
<tr>
<td>HERBACEOUS</td>
<td>Sage, Rosemary, Thyme, Oregano &amp; Marjoram, Lavender &amp; Savory, Virginia Mountain Mint &amp; Bee Balm</td>
<td>(Comfrey)</td>
<td>Parsley, Basil &amp; Tulsi, Cilantro, Tomatoes</td>
</tr>
<tr>
<td>GROUND COVER</td>
<td>Strawberries - Everbearing, Strawberries - June Bearing</td>
<td>Sea Kale</td>
<td>Nasturtium, Sweet Potato</td>
</tr>
<tr>
<td>CLIMBERS &amp; VINES</td>
<td>Passion Fruit</td>
<td></td>
<td>Squash &amp; Beans</td>
</tr>
<tr>
<td>RHIZOSPHERE</td>
<td>Red Wine Cap Mushrooms, Shiitake Mushrooms</td>
<td></td>
<td>Taro, ginger, turmeric, Beets &amp; Carrots</td>
</tr>
<tr>
<td>RAIN GARDEN</td>
<td>Upland rice</td>
<td>Upland rice?</td>
<td></td>
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</table>
Hopi Reservation in Kykotsmovi, Arizona

Corn grown without irrigation

The importance of our own seed saving is vital!
PRESCOTT AREA NATIVE FOOD FOREST PLANTS

HIGH CANOPY

- Arizona walnut *Juglans major*
- Saguaro *Carneglea gigantea*
- Juniper *Juniperiperus*
- Oak *Quercus*
SUB-CANOPY & SHRUBS

- **Fruit trees** - apple, peaches, nectarines, plums, apricots, pear

- **Hackberry** *Celtis*

- **Manzanita**
  *Archtostaphylos*
PRESIDENCE AREA NATIVE
FOOD FOREST PLANTS

BUSH & HERBACEOUS LAYER
EDIBLE PLANTS

- Sunflowers, *Helianthus*
- Quamash, *Camassia quamash*
- Lambs Quarters *Chenopodium album*
- Figworts, *Schrophularisa*
- Agave
- Prickly Pear, *Opuntia*
PIN OAK TREE
QUERCUS PALUSTRIS
Tall Canopy
Firewood

Wood Ash
CREATING NESTING SITES
FLOWER TOP SHIITAKES
Red Wine Cap Mushrooms
In Maple Wood Chips

Creating an Outdoor Mushroom Garden
Growing Red Wine Cap Mushrooms in Your Yard
Who needs to watch Game of Thrones when I can play GAME OF THORNS in my own backyard?

Sunny Glen Garden version:
The BlackRaspberryLands
House Sunny Glen
Queen of the Garden
Preying Mantis Yielding a Trowel (banner)
Providing Nesting Habitat for Native Bees in Your Garden
# SUNNY GLEN GARDEN
## EDIBLE FOOD FOREST PLANTS

<table>
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<tr>
<td></td>
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<td>Rhubarb</td>
<td>Corn</td>
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<tr>
<td></td>
<td>Goji Berries</td>
<td>Asparagus</td>
<td>(Cotton)</td>
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<td></td>
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<td>Shiitake Mushrooms</td>
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<td>Sweet Potato</td>
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<tr>
<td>CLIMBERS &amp; VINES</td>
<td>Passion Fruit</td>
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<td>Squash &amp; Beans</td>
</tr>
<tr>
<td>RAIN GARDEN</td>
<td>Upland rice</td>
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</table>
FIBER - Growing Cotton
Fuller's teasel plant, or Dipsacus fullonum
In the west, 60% of consumed water resources goes into lawns

- Water diversion harms the environment, kills fish, returns polluted water to our streams & rivers.

- The high cost of irrigation system installation & maintenance is reflected in what we pay in our water bills.
Overflow water collection area turned rain garden
IMPROVING SOIL HEALTH WITH RECYCLABLES:
LASAGNE MULCHING/ LAYER MULCHING
SWALES & MULCHES
ENVIRONMENTALLY FRIENDLY

Reduce waste - 330,000 tons of trash are generated every year in Columbus from city residents!
ROUND UP YOUR LEAVES IN THE OK LEAF CORRAL
FREE MULCH

The following Yavapai County Transfer Stations have FREE mulch when available:
Black Canyon City
Camp Verde
Congress
Mayer
Paulden
Seligman
Skull Valley

For availability, please call 928-771-3183
(You will be required to sign a mulch waiver form.)
Composting kitchen scraps

Trespassers will be composted!!!
City of Columbus

Rat Assessment Team

Know your local laws
URBAN POLLINATOR
POCKET PRAIRIE GARDEN
CHECK WITH NEIGHBORS & LOCAL BUSINESSES:

Leaves from neighbor’s trees - opportunities for sharing info, education  
Free coffee grounds for compost -  
Free cardboard - grocery stores, home improvement stores, girl scouts cookie boxes  
Free newspaper - weekly ads that come in the mailbox
ORGANIC PEST CONTROL METHODS

• Crop Rotation
• Companion Planting
• Beneficial Insects
• Row covers
• Cold frames
CROP ROTATION

- Legume
  - beans, peas, lima beans, potatoes
- Root
  - onions, garlic, turnips, beets, carrots, radishes
- Leaf
  - lettuce, greens, herbs, spinach, brassicas, corn
- Fruit
  - tomatoes, cucumbers, peppers, eggplant, squash, melons
Japanese beetle, Squash bugs, aphids, chipmunks
Creating plant communities which have mutual benefits to each other.

- An organic way to protect crops from pests
- Can improve pollination of fruit and vegetable crops
- Enhance plant performance
- Can avoid chemicals and pesticides which you don’t want in your food and avoid killing off beneficial insects too
WITH COMPANION PLANTS
WITHOUT COMPANION PLANTS
ORGANIC GARDENING METHODS
It is estimated that the average American meal travels about 1500 miles to get from farm to plate.

* * *

We step outside the door for our dinner.
DIVERSITY OF LIFE

Increases Stability and Resilience for Change
Reconsidering “Weeds”
Lights Out!
## Linden Community Challenges

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<th>Franklin County</th>
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<td>Infant Mortality</td>
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<td>(infant deaths / 1000 births)</td>
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<tr>
<td>Life Expectancy</td>
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<td>77.2</td>
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<td>(age in yrs)</td>
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<tr>
<td>Education</td>
<td>26.2</td>
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<td>(% adults 25+ yrs without high school diploma or GED)</td>
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<td>Unemployment</td>
<td>24.4</td>
<td>8.7</td>
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<tr>
<td>(% 16 yr olds in labor force unemployed)</td>
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<tr>
<td>Vacancy</td>
<td>17.3</td>
<td>3.8</td>
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<tr>
<td>(% of residents vacant)</td>
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<tr>
<td>Incarceration</td>
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<tr>
<td>(Incarceration per 1000 adults)</td>
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# Clintonville

Most frequent crimes in the past year

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<th>Crime</th>
<th>Count</th>
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<tbody>
<tr>
<td>Counts of theft</td>
<td>31</td>
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<tr>
<td>Counts of assault</td>
<td>8</td>
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<tr>
<td>Counts of vandalism</td>
<td>5</td>
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<tr>
<td>Counts of robbery</td>
<td>3</td>
</tr>
<tr>
<td>Counts of burglary</td>
<td>3</td>
</tr>
</tbody>
</table>

# North Linden

Most frequent crimes in the past year

<table>
<thead>
<tr>
<th>Crime</th>
<th>Count</th>
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</thead>
<tbody>
<tr>
<td>Counts of theft</td>
<td>671</td>
</tr>
<tr>
<td>Counts of assault</td>
<td>362</td>
</tr>
<tr>
<td>Counts of burglary</td>
<td>189</td>
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<tr>
<td>Counts of vandalism</td>
<td>160</td>
</tr>
<tr>
<td>Counts of robbery</td>
<td>76</td>
</tr>
</tbody>
</table>
COMMUNITY OUTREACH & EDUCATION

Little Free Library - take, share or bring free books, seeds and plants

Neighborhood Boys kale converts
Seed Saving Workshop

Recycled Plastic Plant Labels

Pot Party!
GARDEN SNACKS
Urban Farm Tour

Sustainable Living

Home & Garden Tour
SUNNY GLEN GARDEN
CONNECTING COMMUNITY CORRIDOR
FOR POLLINATORS AND BIRDS

Ohio sourced native plants

Straight species

35 families growing natives in their garden

Or organic vegetables

And providing safe habitat
COLD FRAME / CROP COVER
OUR SOLUTION TO PLASTIC POTS & THE PLANT NURSERY INDUSTRY

Paper Pots made from recycled newspaper!
Permaculture Principles or Guidelines

- Observe and interact with the land
- Connect and integrate the pieces
- Catch and store energy and materials
- Each component performs multiple functions
- Use small scale, intensive systems
- Apply self-regulation and accept feedback
- Obtain a yield
- Use and value renewable resources and services
- Produce no waste
- Design from patterns to details
- Integrate rather than segregate
- Use small and slow solutions
- Use and value diversity
- Use edges and value the marginal
- Creatively use and respond to change
Thank-You!

Questions?
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