



Creating a Sustainable Garden

5/17/2024

Creating a Sustainable Garden



AGENDA

- About Sustainable Ballard
- What is Sustainable Gardening and Why is it important?
- Steps to Garden Sustainably
 - 1) Site Planning
 - 2) Soil Analysis & Preparation
 - 3) Plant Selection and Planting
 - 4) Water Conservation
 - 5) Pests & Pollinators
 - 6) Tools & Materials
 - 7) Maintenance
- Resources
 - Books, Websites, Support

About Sustainable Ballard

Mission & Vision

Sustainable Ballard educates, inspires, and engages neighbors to take action to live more sustainably both individually and collectively. Our vision is a diverse, inclusive, joyful, sustainable community co-creating a world for this and future generations where eco-systems are healthy and peace is inevitable.

Guiding Principles

When people come together to create a healthy community, their ideas inevitably lead us along the path to sustainability.

Our resources, particularly publicity and funding, are available to support the sustainable initiatives of community members.

Sustainable Ballard Projects

Project	Volunteers	Metrics
Bakery Gleaning	25 gleaners	19,200 donuts & 6000+ loaves of bread distributed
Ballard Beer Hop	9 volunteers	5 breweries, 43 participants, 4 raffle winners
Ballard Knitters	40 knitters	2500+ hours = 251 hats, 181 scarves, 6 other
Ballard Sprouts	30 volunteers	315 volunteer hours, 31 giving gardens, 20,000+ plants
Ballard Tool Library	15 volunteers	24 new members, 541 loans, 291 users
Edible Garden Tour	47 volunteers	21 gardens, 285 attendees, 10 raffle winners
Free Letters Home	3 volunteers	20 cards/week avg, 600 people served
Giving Sunday	4 volunteers	7 causes, 4 boxes books, \$40 in stamps, 2 bags yarn
Holiday Party Barter Fair	6 volunteers	35 attendees, 1 food sponsor, 1 live musician
Idle Free Ballard	35 followers	300 cards distributed, 7 community events
Market Gleaning	34 gleaners	501 hours = 24,000+ pounds produce
RainWise Outreach	305 ambassadors	1400 doorbells rung, 15 events
Sustainable Ballard Festival	23 volunteers	26 booths, 500+ visitors, 3 workshops, 3 music acts

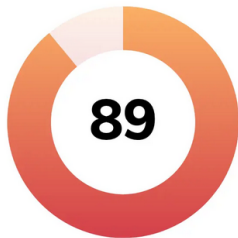


Questions?

Climate Change Predictions

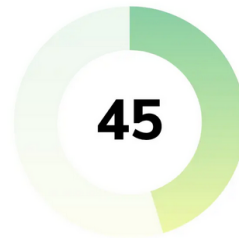
PRECIPITATION

Extreme



HEAT

High



DROUGHT

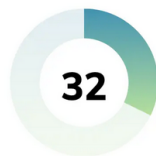
Significant



FLOOD



7%
of buildings



FIRE



17%
of buildings



Why Sustainable Gardening?

What's going on that makes our future so problematic?

- Weather has become more extreme everywhere, e.g. forest fire smoke, atmospheric rivers.
- Record droughts, record heatwaves, record amounts of rainfall and snow around the world.
- Climate change, climate warming, or climate chaos – things are changing.

What is Sustainable Gardening?

Permaculture is a philosophy of working with, rather than against nature. It involves thoughtful observation not thoughtless labor, looking at plants and animals in all their functions rather than treating many areas as a single product system.

*-Bill Mollison
"Father of Permaculture"*



What is Sustainable Gardening?

Unsustainable Gardens	Sustainable Gardens
Requires regular watering from city water	Uses other available water sources: Local precipitation Harvested rainwater Runoff from impervious surfaces
Disposes of weeds & plant trimmings	Recycles organic matter back into soils
Requires fertilizer to support healthy plant growth	Healthy soil, compost, mulch, beneficial insects, properly chosen plants in best locations promote healthy plant growth.
Site structure and materials are chosen without consideration of end of project life	Garden structures and features can be adapted and reused in place or deconstructed and reclaimed or recycled.
More time, resources and maintenance are required because the design is overlaid on the site.	Design solutions fit the place and reflect the local soils, vegetation, materials and/or culture.



Questions?

How to Garden Sustainably

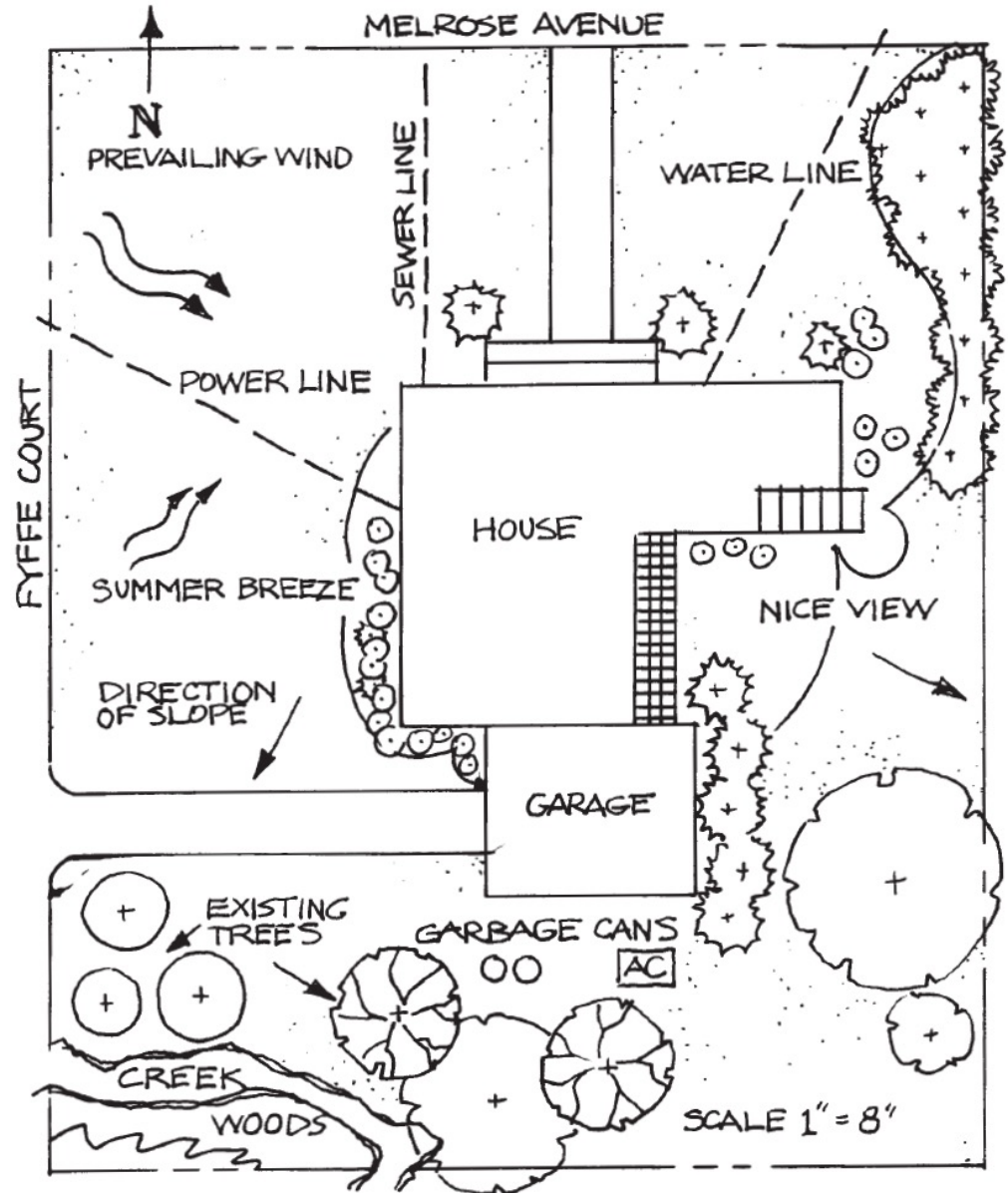
7 Steps to a Sustainable Garden

- 1) Site Plan & Design
- 2) Soil Analysis & Preparation
- 3) Plant Selection & Planting
- 4) Efficient Irrigation
- 5) Pests & Pollinators
- 6) Tools & Materials
- 7) Maintenance

1. Site Planning & Design

Site Analysis

- Water resources & surface water runoff
- Soil condition
- Position of the sun at each point in the day
- Major landscape features (trees, buildings) & shading
- Direction of the wind
- Location of utilities
- Zones (frequency of human, plant, and animal needs)
- Views



1. Site Planning & Design

Zone Planting

Zone 1: Oasis Zone

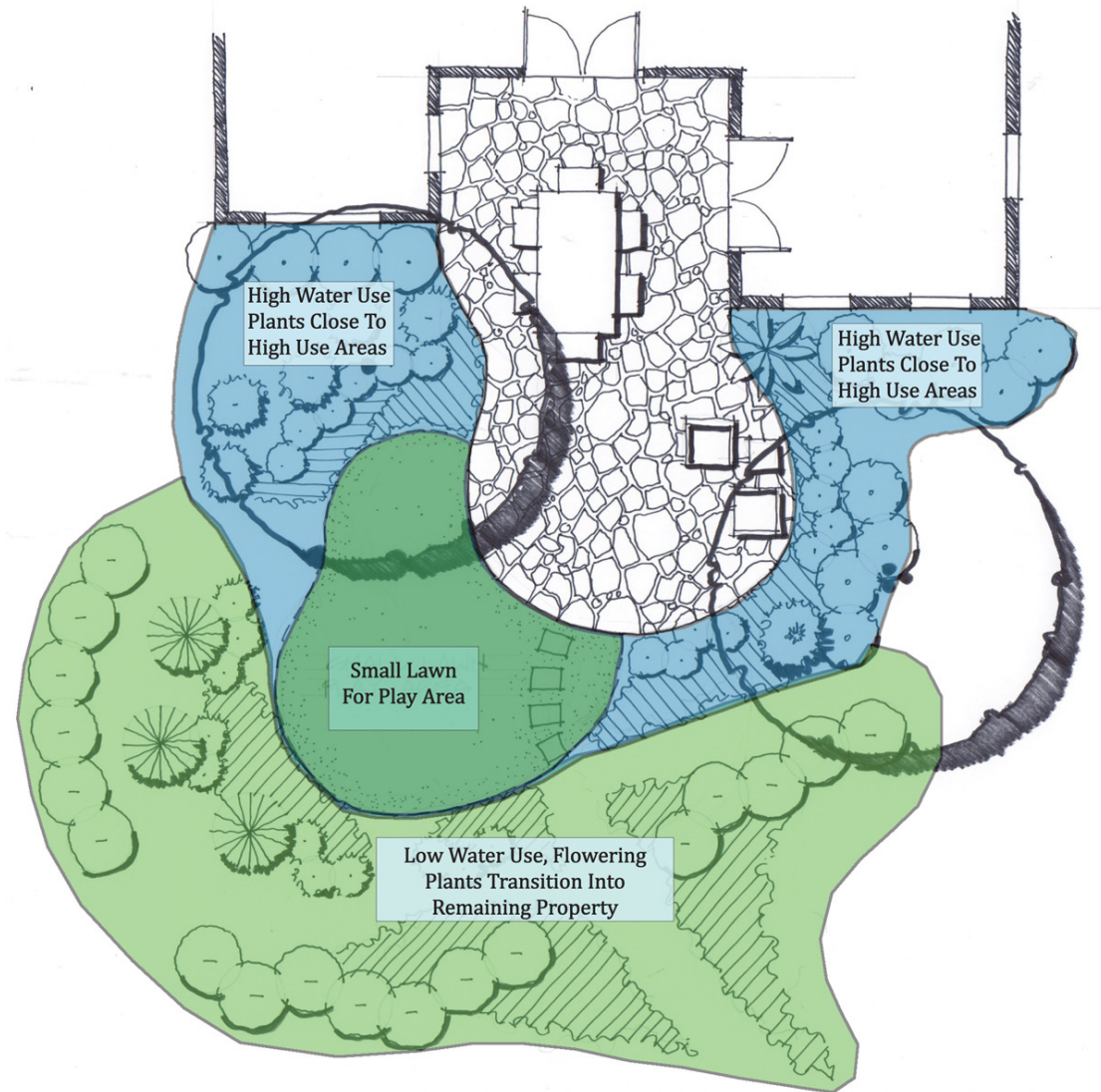
Highest water use, where people spend more time
Lawns & edibles

Zone 2: Transition Zone

Moderate water use
Typically more showy
ornamentals

Zone 3: Arid

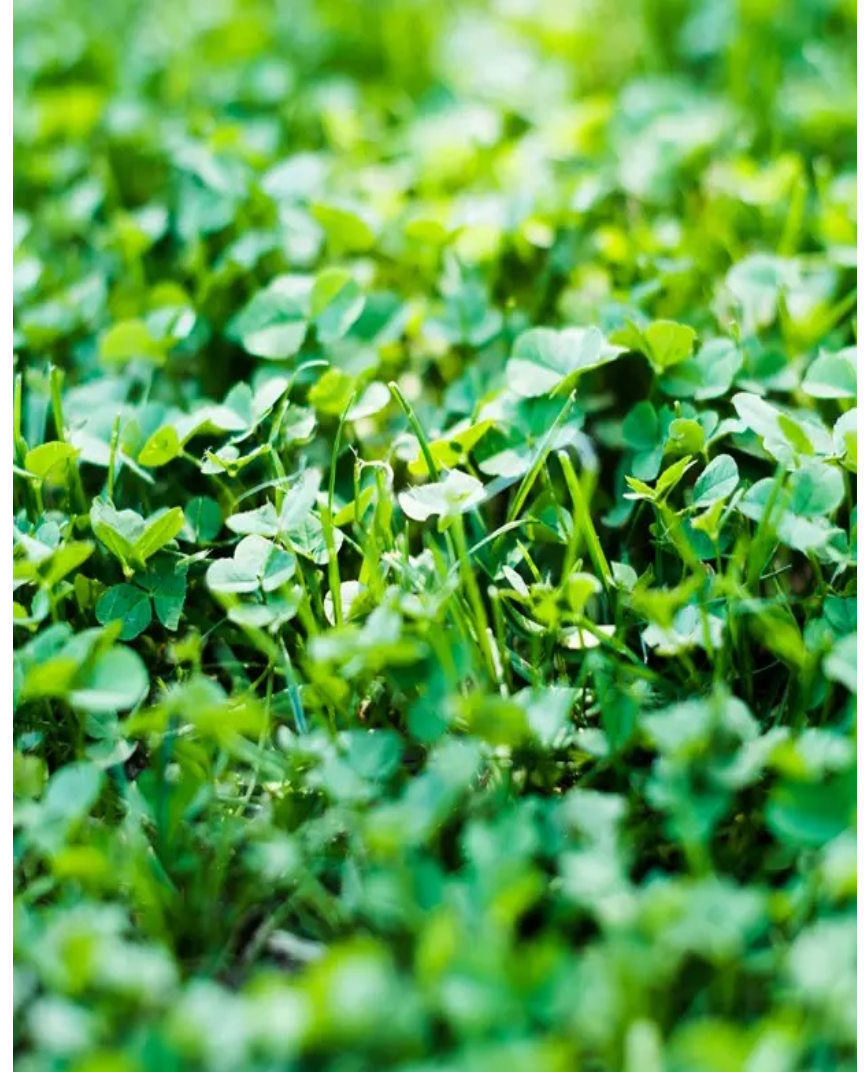
Little or no water use
Low maintenance & drought
tolerant plants
Perennials, grasses



1. Site Planning & Design

Appropriate Turf Areas

- ✓ Consider grass alternatives such as clover.
- ✓ Keep grass away from sidewalks, walls, and fences for easier maintenance.
- ✓ Avoid planting grass in oddly shaped or narrow areas that can't be watered efficiently.
- ✓ Avoid planting grass on slopes where it is difficult to mow and where water and fertilizer run off.
- ✓ Never water grass daily – once every 3 days is enough even in summer.
Set a timer!



2. Soil Analysis & Preparation

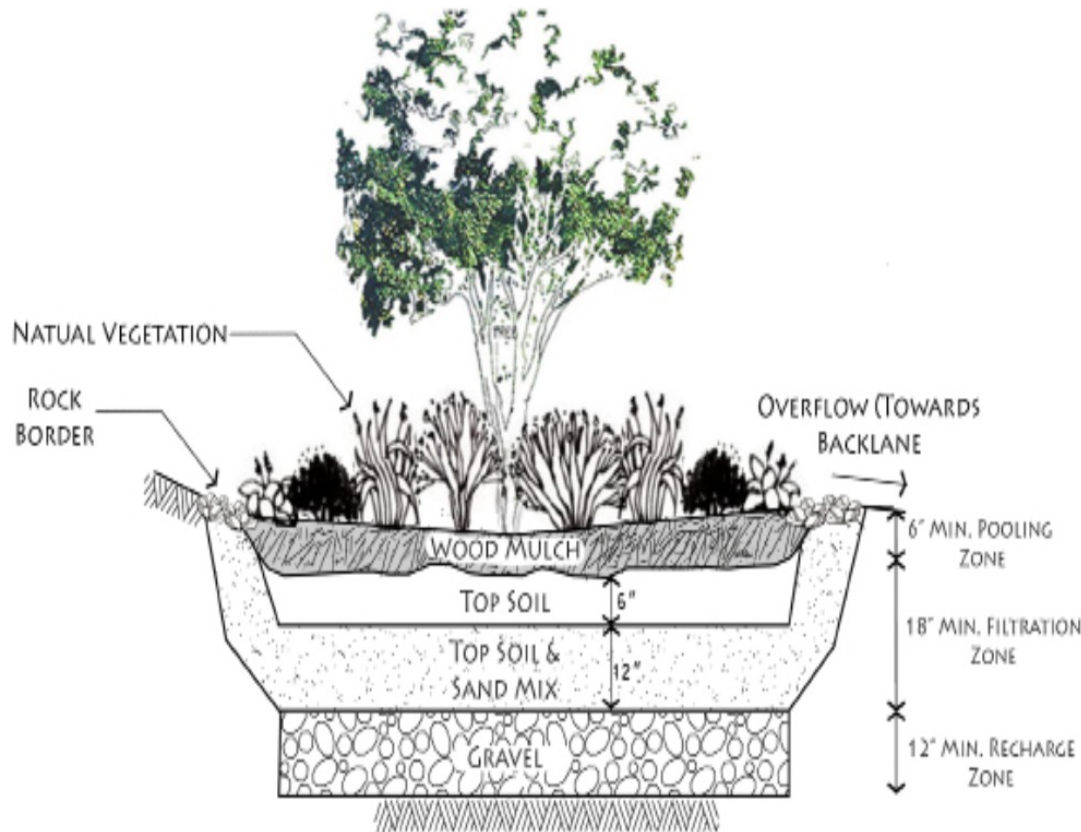
Preserving Soil and Soil Biodiversity

- 75 billion tons of soil lost to erosion each year.
- Soil biodiversity represents the variety of life below ground whose interaction with plants and small animals forms a web of biological activity.
- Soil is the most biologically diverse part of Earth.
- Plants cannot live without the life in the soil

2. Soil Analysis & Preparation

The shape, or soil structure, depends on both the soil's physical and chemical properties. (Amount of clay, silt, sand and humus).

Soil can be improved with natural amendments such as sand, mulch, bone meal, lime, rock phosphate.



Mulch bed profile

2. Soil Analysis & Preparation

COMPOSTING (SIX STEPS)

1. Make a bin from wire or purchase a high-rise or tumbler composter



2. Choose a shady location

3. Add brown organic matter (hay, straw, old leaves, sawdust)



4. Add green materials (table scraps, grass clippings)

5. Cover pile with a tarp to preserve moisture

6. Do not add meat and fish, diseased plants, weed seeds

2. Soil Analysis & Preparation

USE NATURAL FERTILIZERS

1. Grass clippings on lawn,
adds nitrogen

2. Manure

3. Compost

4. Fish oils

5. Modern compost tea



3. Plants and Planting

Right Plant, Right Place

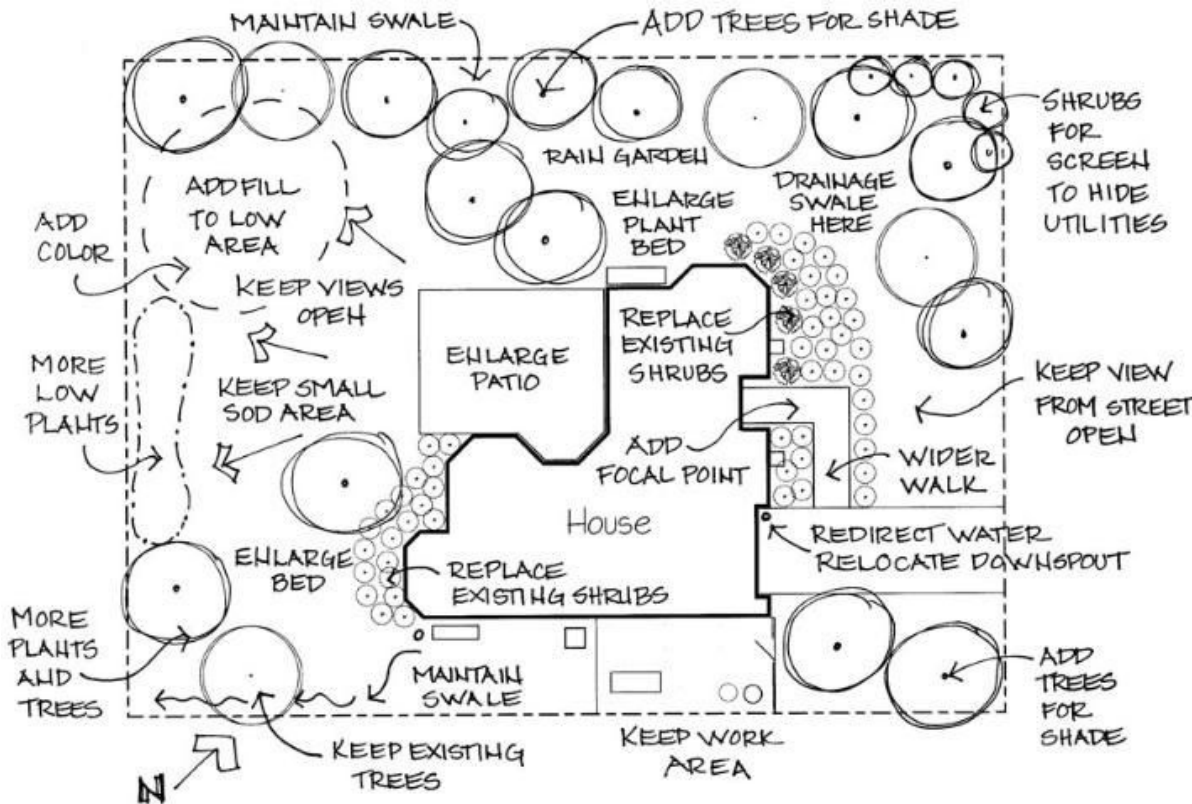
Locate features: trees, planting beds, mass plantings

Add specifics: plant varieties, color, texture, size & height

Choose drought-resistant plants when possible

Group plants by needs – choose appropriate location

Choose native plants



3. Plants and Planting

NATIVE PLANTS of Western WA

<https://www.wnps.org/native-plant-directory>



3. Plants and Planting

DROUGHT TOLERANT PLANTS



DROUGH-RESISTANT PLANTINGS

Perennials

Arizona columbine
Artemisia
Asters
Baby's Breath
Blue pineleaf Sea-rocket
Columbine
Coreopsis
Delphinium
Echinacea
Gaillardia
Iris
Lamb's Ears

Bedding Plants

Gomphrena
Clarkia
Wild Rose
African Daisy
Cosmos
Ice Plant
Portulaca
Scaevola
Poppy
Nierembergia
Gazania
Lotus Vine

Trees & Shrubs

Caragana
Dogwood
Bur Oak
Haskberry
Pine
Nurmbark
Potentilla
Sumac
Currant
Cinquefoil
Honey Locust
Silver Buffalo-berry

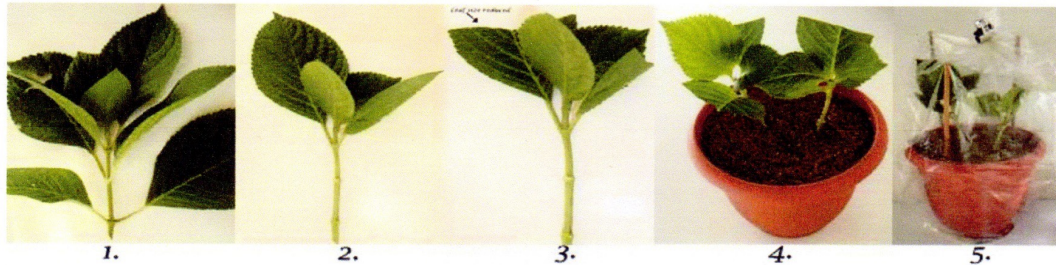
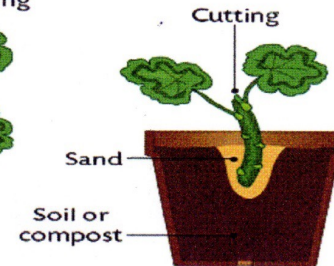
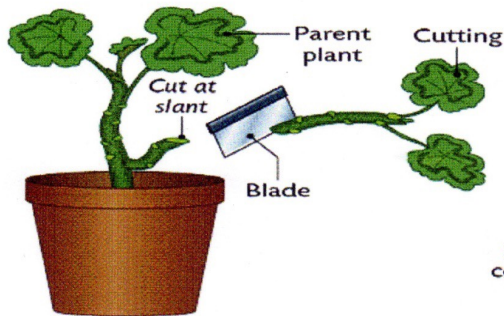
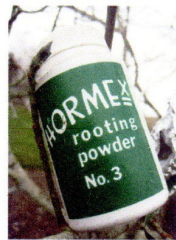


3. Plants and Planting

PROPAGATION

CUTTINGS

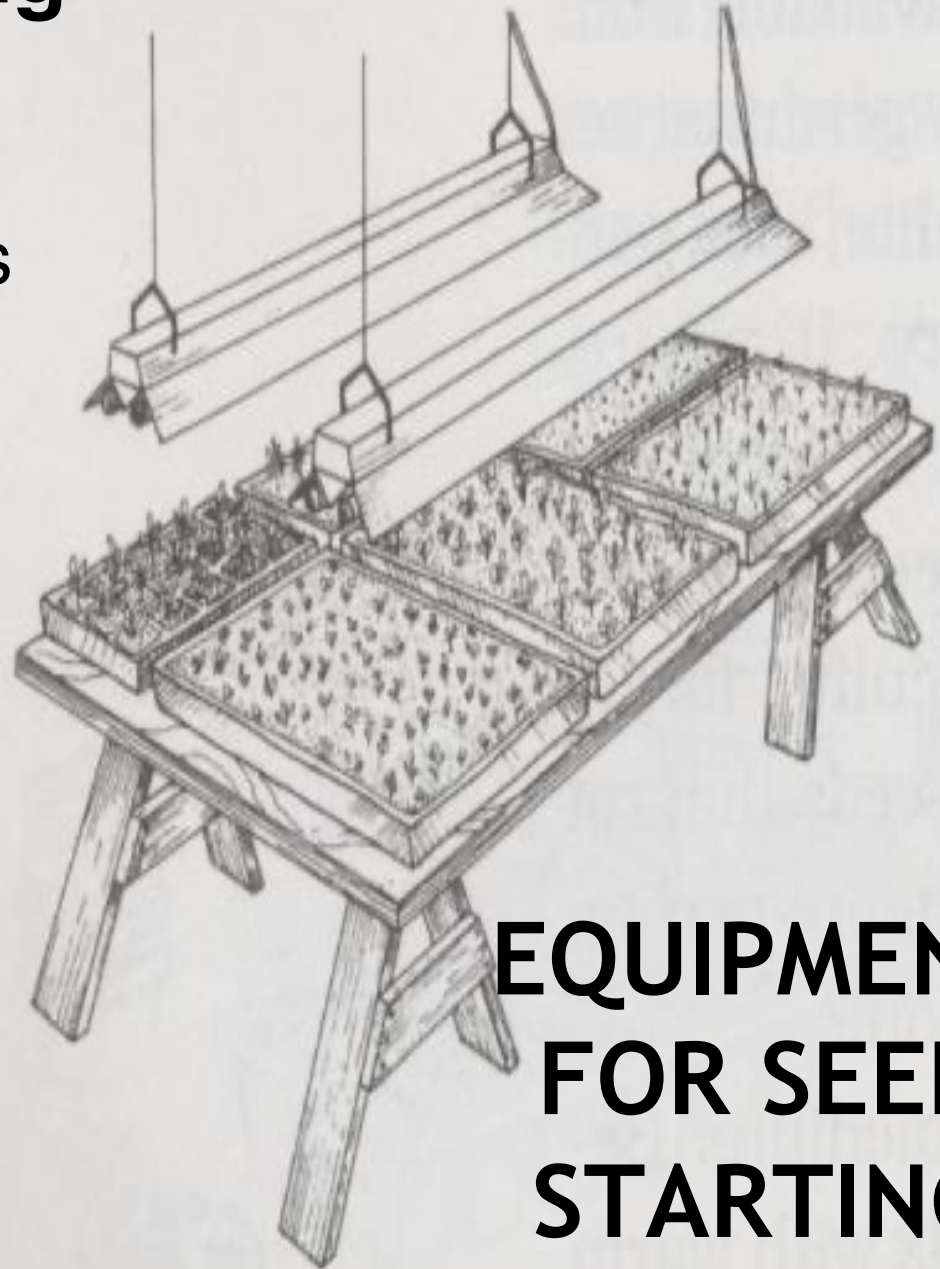
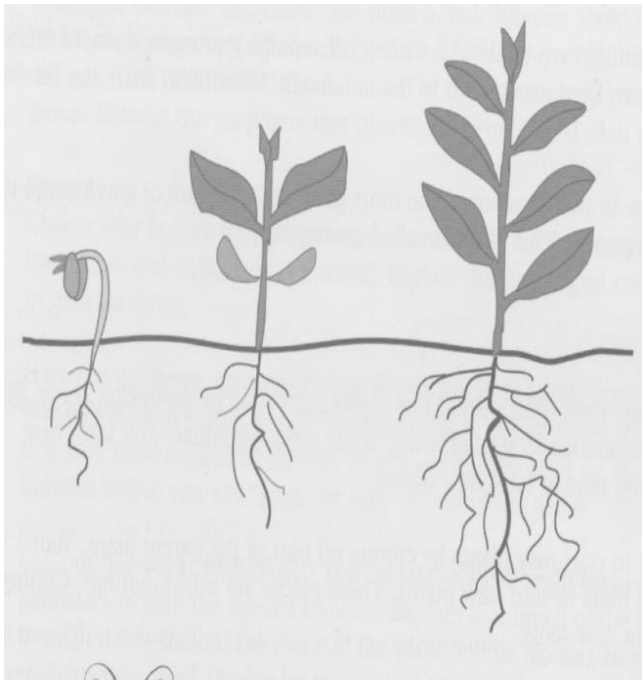
Put cutting into a rooting powder and plant into a soil-less mixture



Put cuttings into water to grow roots.

3. Plants and Planting

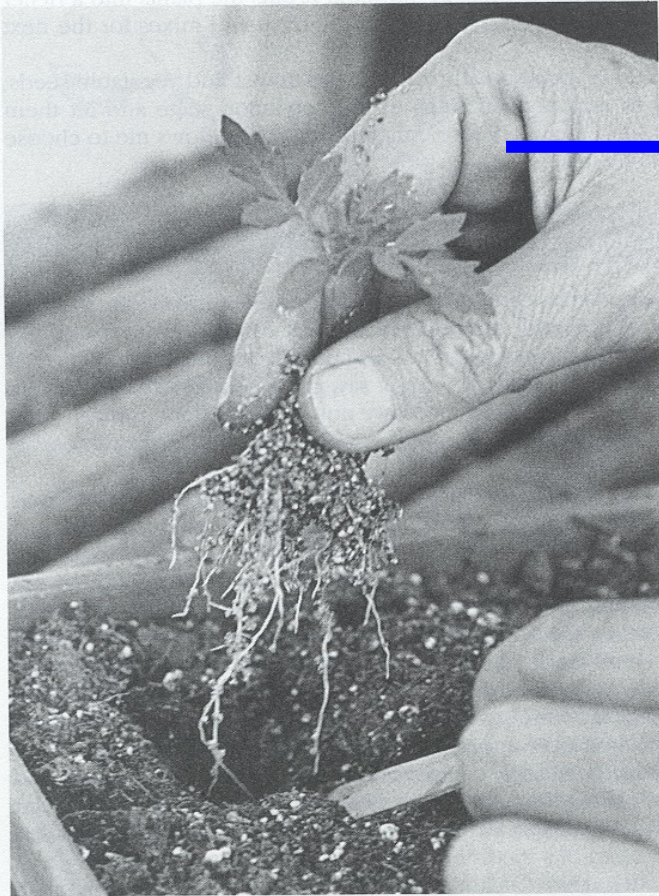
Plant seeds indoors
Transplant seeds outdoors



**EQUIPMENT
FOR SEED
STARTING**

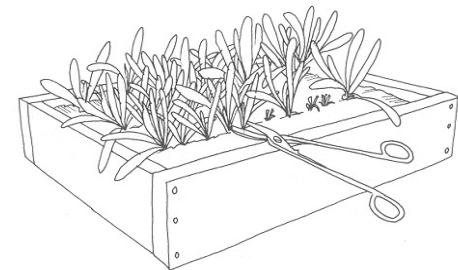
3. Plants and Planting

Transplanting & Trimming Seedlings



Transplanting a seedling into a new flat provides it with richer soil and more room to grow.

1. Moisten media
2. Gently separate seedlings
3. Poke hole in media
4. Place seedling
5. Firm soil
6. Trimming



3. Plants and Planting

COMPANION PLANTING THE OLD FASHIONED WAY WITH A 3 SISTERS GARDEN

corn, pole beans & squash

**THE CORN SUPPORTS THE BEANS, THE BEANS ADD NITROGEN
AND THE SQUASH SHADES OUT THE WEEDS**

- 1) Plant the corn after danger of frost has passed.
- 2) Plant the pole beans when the corn is 5 inches high.
- 3) Plant squash seeds one week later.

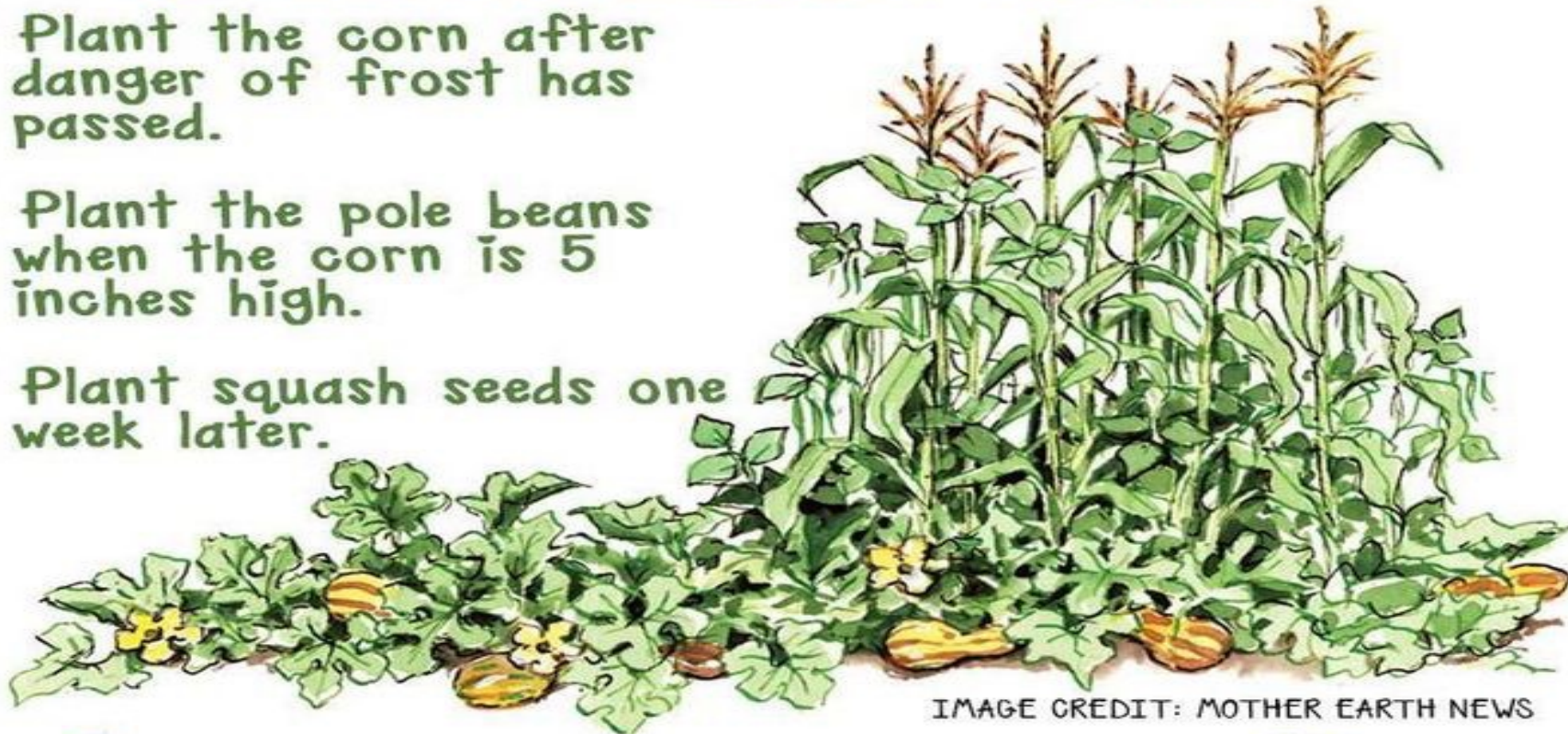
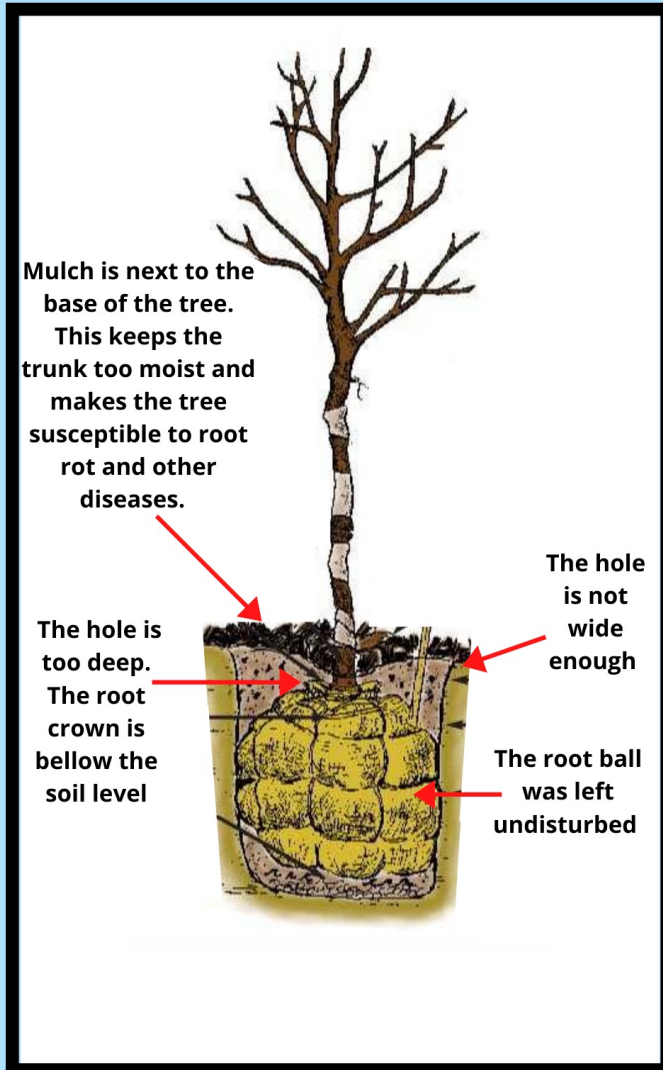


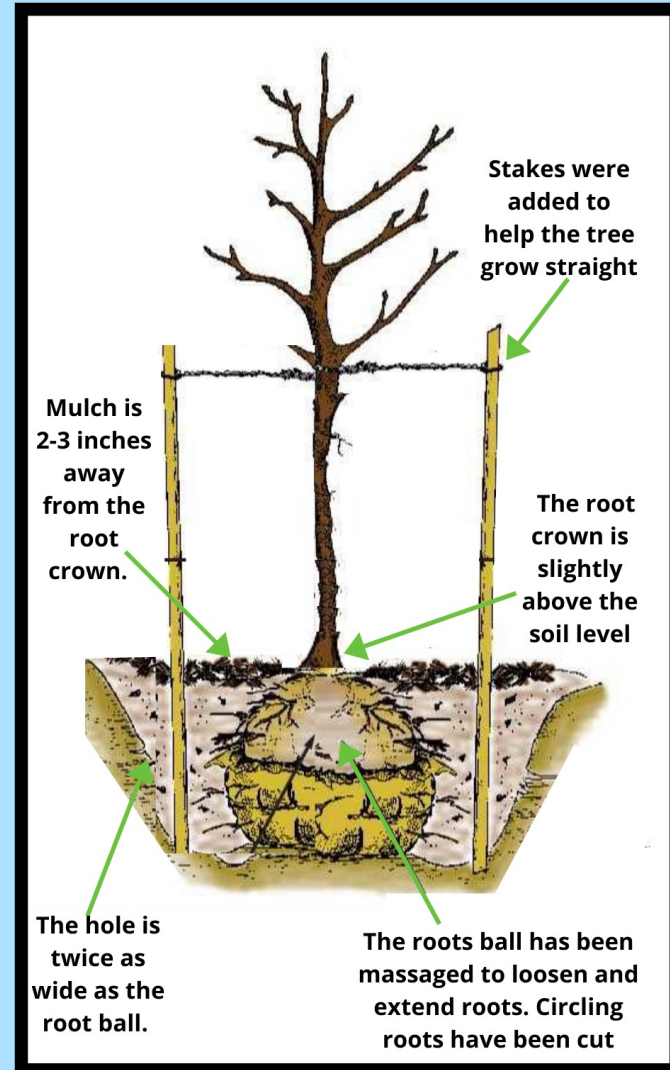
IMAGE CREDIT: MOTHER EARTH NEWS

3. Plants and Planting

Incorrect



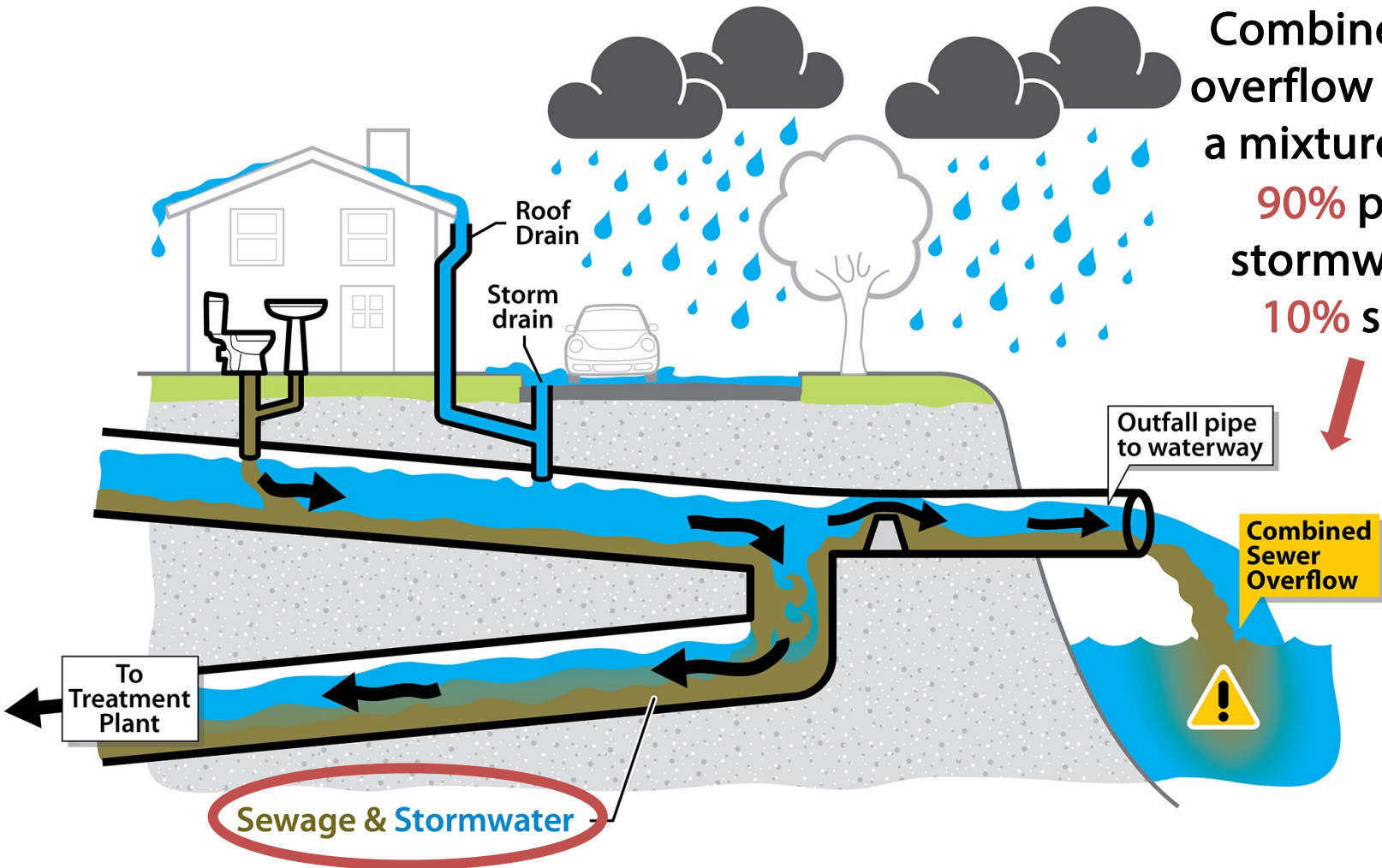
Correct





Questions?

4. Water Conservation



Combined sewers overflow - releasing a mixture of about **90%** polluted stormwater and **10%** sewage.

4. Water Conservation

Green Stormwater Infrastructure, or GSI



4. Water Conservation



What is a cistern?

4. Water Conservation

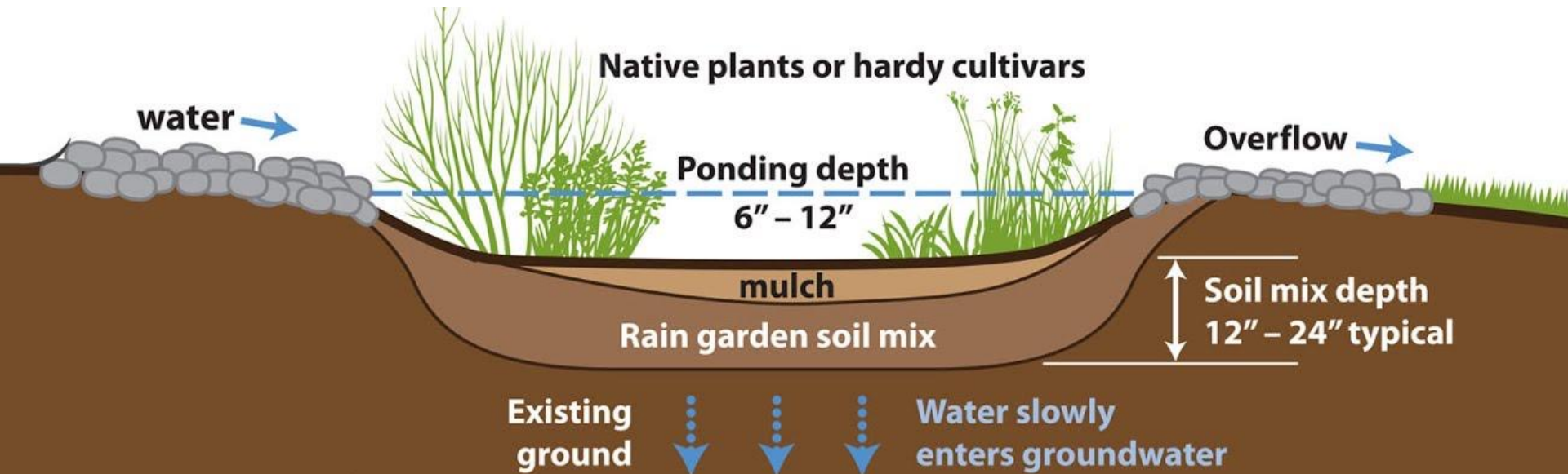


When rainwater flows in and out of the cistern, the slow release of water means it won't rush to the sewer pipes.

4. Water Conservation

What is a rain garden?

- A living water treatment system!
- Shallow depression filled with permeable soil & hardy plants
- Size: 2-7% of roof capture area



4. Water Conservation



4. Water Conservation



Eligibility

Check your RainWise rebate eligibility for a cistern and/or rain garden.

ENTER YOUR ADDRESS



Please do not use any punctuation (no commas, periods, dashes, etc.)



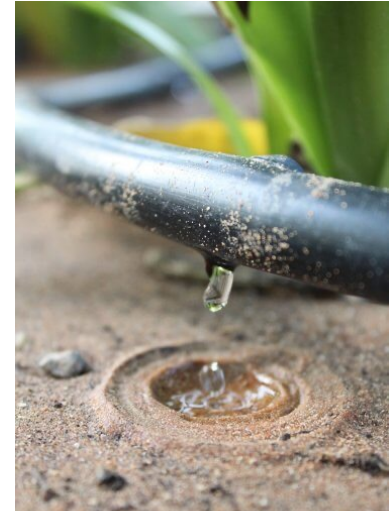
700milliongallons.org/rainwise/eligibility



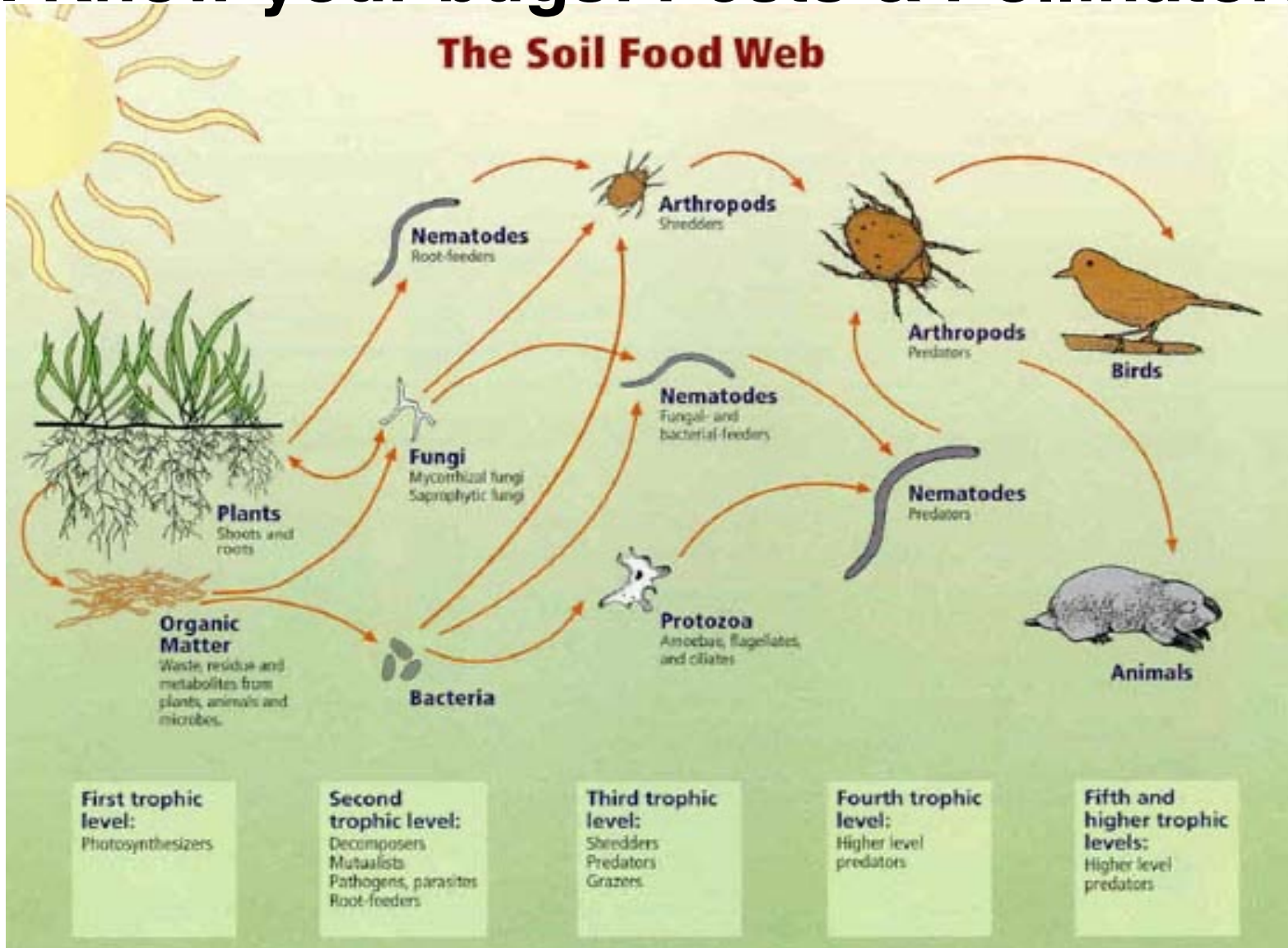
With the 2023 rebate increase, you can get up to **\$5.33** per square foot of roof area captured for cistern projects and up to **\$7** per square foot for rain gardens.

4. Water Conservation

Irrigation



5. Know your bugs: Pests & Pollinators



PRODUCERS

DECOMPOSERS

CONSUMERS

5. Pests & Pollinators

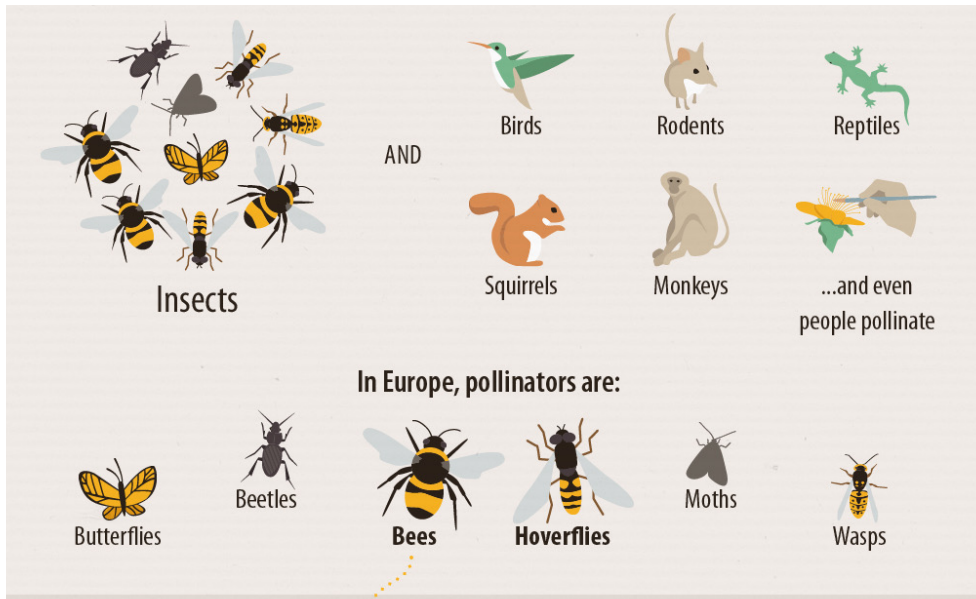


What is Pollination?



5. Pests & Pollinators

POLLINATORS for Productive Plants



AND

Insects

Birds

Rodents

Reptiles

Squirrels

Monkeys

...and even people pollinate

In Europe, pollinators are:

Butterflies

Beetles

Bees

Hoverflies


Moths

Wasps

Bees, the greatest pollinators

2,000 wild species in Europe

Europe hosts **10%** of the world's bees species



Apis mellifera (or western honeybee)

- The best-known bee species
- Managed by beekeepers for honey and other beehive products

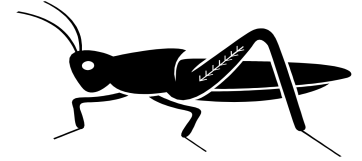
Pollination is the transfer of pollen (male gametes) between the male and female parts of flowers to enable plants to reproduce.

Other means of pollination:

- Self-pollination
- Wind-pollination

5. Pests & Pollinators

CONTROL PESTS BY INTEGRATED PEST MANAGEMENT (IPM)



1. Mechanical Control

Pick by hand, row covers, fences, netting

2. Cultural Control

Clean up debris, plant resistant varieties of plants

3. Biological Control The use of living organisms such as predators, parasitoids and pathogens, to control pest insects, weeds, or diseases.



5. Pests & Pollinators

USE NATURAL OR BIOLOGICAL PESTICIDES

Pyrethrin extracted from a species of chrysanthemum,
controls aphids, scales, mites, beetles

Neem oil produced from the bark of a tree native to India
- an oily extract that can repel insects, stop their feeding
- controls aphids, scales, mites, caterpillars and sawfly

Rotenone alkaloid extracted from roots of tropical plant
- moderate impact on beneficials.

Kaolin Clay Spray (Rodale) - spray fruit trees

Dormant Oils – spray fruit trees

Homemade sprays – 3 c vinegar, ½ c salt, 1T Dawn

Liquid Soap



5. Pests & Pollinators

ATTRACT BENEFICIAL PREDATORS

- Kill and consume many prey
- Generally larger and faster than prey
- Kill & eat prey to survive & reproduce
- Many are easily recognized
- Built to kill
- Removes the evidence



1. Lady beetle
2. Ant lion
3. Parasitic fly
4. Assassin bug
5. Parasitic wasp
6. Brown lacewing
7. Praying Mantis



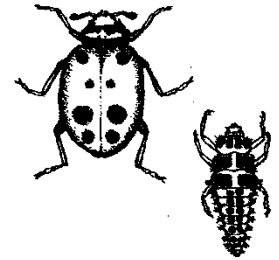
Parasitic fly



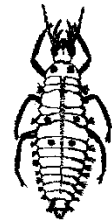
Assassin bug



Parasitic wasp



Lady beetle, larva



Ant lion

PLANTS THAT HELP



Four-O'Clocks draw Japanese beetles which eat the foliage. The foliage is poisonous and kills them. But plant them away from the roses to draw them.

Garlic repels aphids and is good to plant among your roses. Garlic also repels Japanese beetles, root maggots, and carrot root fly.

Basil helps repel mosquitoes and flies. Plant it near your door or patio.

PLANTS THAT HELP



Catnip deters flea beetles, Japanese beetles, squash bugs, ants, weevils and mice.

Marigolds help deter whiteflies when planted around tomatoes.

Nasturtiums deter wooly aphids, whiteflies, squash bug, and cucumber beetles. Plant them as a barrier around tomatoes, cabbage and cucumbers.



Questions?

6. Tools & Materials



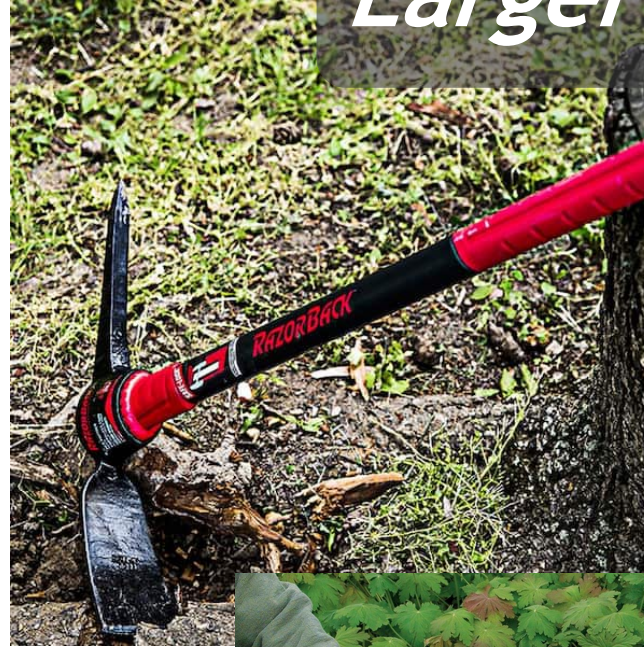
Hand Tools

PORTABLE FOLDING SAW



6. Tools & Materials

Larger Tools



6. Tools & Materials



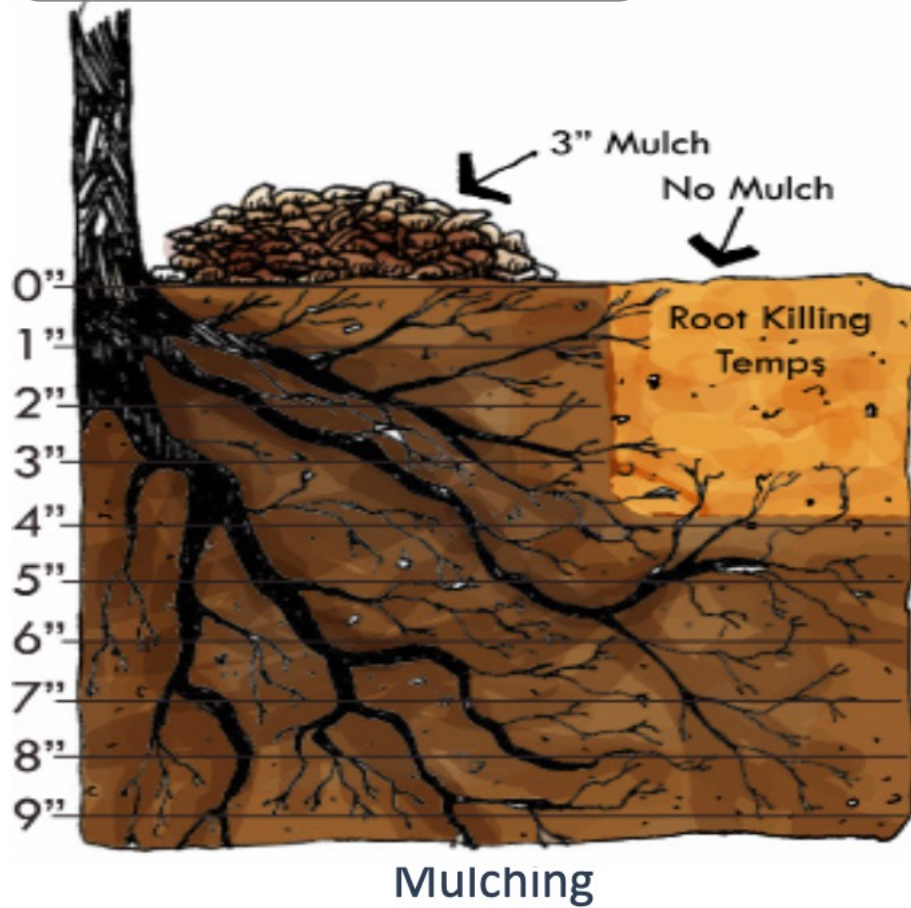
**BALLARD
TOOL LIBRARY**

a project of Sustainable Ballard



6. Tools & Materials

Mulch



6. Tools & Materials

Paving



7. Maintenance

MAINTAIN HEALTHY PLANTS

1. Water plants during the morning
2. Use natural fertilizers
3. Remove diseased leaves
4. Use mulch around plants
5. Provide air circulation by not crowding the plants
6. Disbud and deadhead
7. Avoid planting tomatoes in the same place
8. Avoid monocultures





Questions?

SUMMARY: EIGHT POINTS

Practice Sustainability of the Environment and Garden

- 1. Recycle our organic urban wastes --do not pollute our environment**
- 2. Avoid a “zero kill” pest strategy - killing only produces more resistant pests (IPM)**
- 3. Develop plant population that is resistant to insects and disease**
- 4. Follow the principles of ecological and permaculture theories.**

5. Avoid large monocultures - they increase the potential for a disaster from a new or more virulent disease or insects.

6. Rotation of crops is an effective solution.

7. Amend the soil - add compost, allow microbes and earth worms to grow, do not cultivate the soil.

8. Conserve water



RESOURCES

Books:

- How to Grow More Vegetables
- Right Plant, Right Place
- Maritime Northwest Garden Guide
- The Garden Primer
- Western Garden Book
- Gaia's Garden: A Guide to Home Scale Permaculture – Toby Hemenway



RESOURCES

Websites:

- WA Native Plant Society
- USDA Plant Hardiness Zones
-
<https://planthardiness.ars.usda.gov/>
- How to assess your microclimate -
<https://ucanr.edu/sites/MarinMG/files/47782.pdf>
- How to raise chickens -
<https://www.almanac.com/raising-chickens-101-how-get-started>



RESOURCES

Support:

- Seattle Permaculture Guild - <https://seattlepermacultureguild.org/>
- Beacon Food Forest - <https://www.beaconfoodforest.org/>
- American Horticulture Society- **#growagreenerfuture**
- [Ecochallenge.org](https://www.ecochallenge.org/)
- Sustainable Ballard's Edible Garden Tour – June 22

