The Water-Smart Garden:
Strategies to Use Water Efficiently in a Changing Climate

- Water Facts:
    - 3% of the Earth's water is fresh water
        - Less than 1% is available for our use
    - Drought is when a region receives below normal amounts of precipitation that result in a water shortage
- Plant Facts:
    - Plants need water to grow and survive – they are made up of 95% water
    - Plants also require oxygen, found in the soil
    - Different plants have varying water and oxygen requirements
    - A large percentage of residential water use goes to the landscape – up to 70% in dry climate regions
    - More plants die from over-watering than underwatering
    - Most people water their plants too often and inefficiently
    - Poor plant choice increases a garden's reliance on supplemental water
    - Inaccurate watering guidelines are prevalent – often offered by 'landscape professionals'
    - Over-watering leads to insect and disease problems for plants
    - Can decrease blooming in flowering plants
    - Flushes out nutrients from the soil like nitrogen
    - Can lead to weak wood formation in trees
    - Decreases the amount of oxygen present in the soil
- Strategies for Conserving Water in the Garden:
    - **Choose the 'right' plants**
        - Select plants native to the the PNW or regions with a similar climate

        - They will require less supplemental water, fertilizer or special care
    - Beware where you buy plants
        - Big box stores often sell some plants that aren't suitable for your region
    - Botanical garden plant sales and local nurseries are good options
    - Visit local botanical gardens for inspiration for low-water-use plants
    - Avoid choosing plants based on their looks alone without making sure they can tolerate site conditions
    - Research plants before you buy to ensure they are drought-tolerant (low-water-use)
    - Drought-tolerant plant characteristics include a foliage with a grayish hue, smaller leaves, or succulent stems and leaves gray or small leaves
    - Avoid using plants whose native conditions are very different from yours when it comes to watering needs
    - Switch out thirsty flowering annuals for shrubs, perennials, or succulents that use less water
- **Plant Location**
    - Areas in the garden that face west and south, receive the most sunlight
    - North-facing exposures have the most shade
    - Use drought-tolerant plants (including sun-tolerant natives) in areas that receive full sun
    - Reduce the summer heat around the home by planting tall shrubs or vines against walls
    - Reduce the effects of wind by planting hedges
    - Determine what areas around the site that are rather dry and use drought-tolerant plants in those locations
- **Add Shade**
    - Plants grown in the shade generally require less water than those grown in full sun
    - Trees are the largest plants that we can use to create shade
    - Tall shrubs can also create effective shade, particularly if several planted in a row to create a hedge

        - Be sure to consider a plant's preferred sun exposure when deciding what to plant in shade
        - Filtered sun, part shade are terms that refer to areas that receive dappled sunlight or shade in the morning
    - **Allow plants to grow to mature size**
        - Research the mature size of plants and make sure you have the space for them to grow – don't overplant!
            - Example: a shrub that grows 5 feet wide will need 25 sq. feet to grow (5x5)
        - A mature-sized plant covers more ground, shading the root zone to prevent soil from drying out too quickly
        - Fewer plants are needed and less water required
        - Pruning increases the amount of water needed by plants
        - Avoid excessive pruning – once, maybe twice a year or less!
    - **Build Resilient Soils**
        - Soil amendments such as compost may be needed to help heavy clay or sandy textured soils
        - Native plants generally don't need any amendments unless soil is poor or has been imported from elsewhere
        - To increase the water-holding capacity of sandy soils, incorporate compost into planting holes
        - Heavy clay soils that don't drain well will also benefit from compost which helps to aerify the soil
        - With loamy soil, you generally don't need to add any amendments unless soils are deficient in nutrients
    - **Mulch**
        - Mulching is one of the most effective methods of reducing water use in the garden
        - There are two types of mulch – organic and inorganic
            - Organic mulch is made up of once living things such as leaves, straw, or wood (bark) chips

        - Inorganic mulches are made of crushed rock in varying sizes

    - Mulch is applied around the root zone of plants and prevents soil from drying out quickly

    - Organic mulch is typically applied at a 2-4" thickness while inorganic mulch is applied at 2"

    - Avoid allowing organic mulch to pile up next to tree trunks

- **Remove Non-Functional Lawns**

    - Lawns require a lot of water: 30 – 60% of urban fresh water is used to water the grass in the yard, and they use up to 10X more water than a landscape planted with drought-tolerant plants

    - Lawns are high-maintenance - requiring mowing, fertilizer and contribute to excess landfill waste, and runoff of chemical fertilizers into local watersheds

    - Replace non-functional lawns with lush green, drought-tolerant groundcovers for a beautiful swath of green, or use drought tolerant shrubs, perennials to create an attractive garden

    - For functional lawn areas, consider reducing the size

    - For remaining lawn areas, allow grass to grow taller (2" for warm-season grass / 3" for cool-season lawns), which shades the bottom and is more water efficient

    - Don't bag grass clippings but leave them on the lawn. They will break down quickly returning nutrients to the soil while making it more permeable for water

- **Irrigation: The Good and the Bad**

    - Common watering mistakes

        - Irrigating too frequently

        - Watering at the wrong time of day

        - One-schedule for all plants despite different watering requirements

    - Watering tips

        - There are different methods of providing supplemental water for plants, which include drip irrigation, sprinklers, and watering by hand

- Sprinklers are least efficient with up to 50% of water being lost immediately to evaporation

- Watering by hand using a hose is difficult to measure how much water each plant is receiving

- Drip irrigation is the most efficient method of watering plants and ensures that plants will be healthy and look their best

- Water deeply – encourages deep root growth, soil stays moister longer, flushes out salts

    - Recommended watering depths:

        - Trees 2 to 3-feet deep
        - Shrubs/Vines 18-24 inches
        - Groundcovers/Perennials 18-inches
        - Succulents 12-inches

- Water early in the morning – less evaporation, absorbed more readily

- Change watering schedule seasonally

- Install a 'smart' irrigation controller which automatically adjusts watering frequency and duration in response to local weather conditions

- Move drip emitters outward for trees and shrubs as they grow

- Provide separate irrigation lines, for grass, trees, shrubs/groundcovers/vines, succulents, vegetable gardens, and annual flowering containers

- The length of time water is on is based on how long it takes for water to permeate to the recommended depth

- The amount of time your water is turned on may not change seasonally – but the frequency will

- Consult regional watering guidelines (county, city or water provider)

- Check irrigation systems twice a year for leaks and that water is directed appropriately

- **Water Harvesting: Capturing the Rain**
    - Active water-harvesting methods include collecting rainwater in rain barrels, cisterns, and buckets
    - Passive water-harvesting consists of contouring the soil to capture rainwater and keep it for plants
        - Use swales (rain gardens) and dry river washes are to direct rainwater so it remains in the landscape to water plants and sink into the ground
- **Vegetable Gardens**
    - Vegetables grown in the ground use less water than raised beds.
    - Select location that receives late afternoon shade
    - Use drip irrigation or soaker hoses to water
    - Plant vegetables in a staggered pattern so their leaves cover the soil to prevent soil from drying out quickly
    - Mulch around vegetables using straw

- <u>More Water-Smart Gardening Tips</u>
    - Incorporate succulent plants throughout the drier areas of your garden
    - Replace thirsty plants for drought-tolerant alternatives
    - Use groundcovers as a living mulch to prevent soil from drying out
    - Switch out thirsty annual flowers for shrubs or perennials in containers
    - Rock can be used for design, inorganic mulch, and passive water harvesting
    - Create areas of summer shade to reduce water needs
    - Convert to a drip irrigation system
    - Consult 'reliable' local resources for irrigation guidelines for your area
    - Look into active and passive water collection strategies

Online Resources

PACIFIC NORTHWEST:

Drought-tolerant plant lists for the Northwest:

https://www.seattle.gov/documents/Departments/SPU/EnvironmentConservation/ThePlantList.pdf

https://www.greatplantpicks.org/

Rainwater Harvesting:

https://www.seattle.gov/utilities/protecting-our-environment/sustainabilitytips/landscaping/for-residents/rainwater-harvesting

https://kingcounty.gov/en/dept/dnrp/nature-recreation/environmentecology-conservation/yard-garden/rain-gardens-barrels-cisterns/greenstormwater-incentive-program

Watering Guidelines:

https://www.seattle.gov/utilities/protecting-our-environment/sustainabilitytips/landscaping/for-residents/smart-watering

https://www.savingwater.org/lawn-garden/watering-irrigation/

OTHER REGIONS:

Watering Guidelines

https://www.epa.gov/watersense/watering-tips

Cooperative Extension Offices by State:

https://www.nifa.usda.gov/land-grant-colleges-and-universities-partnerwebsite-directory?state=All&type=Extension

INSTRUCTOR:

Noelle Johnson
Horticulturist
Landscape Consultant
Author: *Dry Climate Gardening, The Water-Smart Garden*

CONNECT:
Facebook: @azplantlady
Instagram: @az.plant.lady

Website: www.azplantlady.com
Email: info@azplantlady.com