Vegetable Gardening in the Low Desert

Presented by:

PHX WATER SMART

Watershed Management Group

Class Overview

Part I – Site Planning and Prep

- Site your garden and prepare for planting

Part II – Seasons and Species

- Select food producing plants appropriate for each growing season

Part III – Tips for Success

- Incorporate additional “green” practices into your gardening

Challenges to Desert Gardening

- Soil Quality
- Caliche
- Pests
- Limited Rain
- Hot Hot Hot!

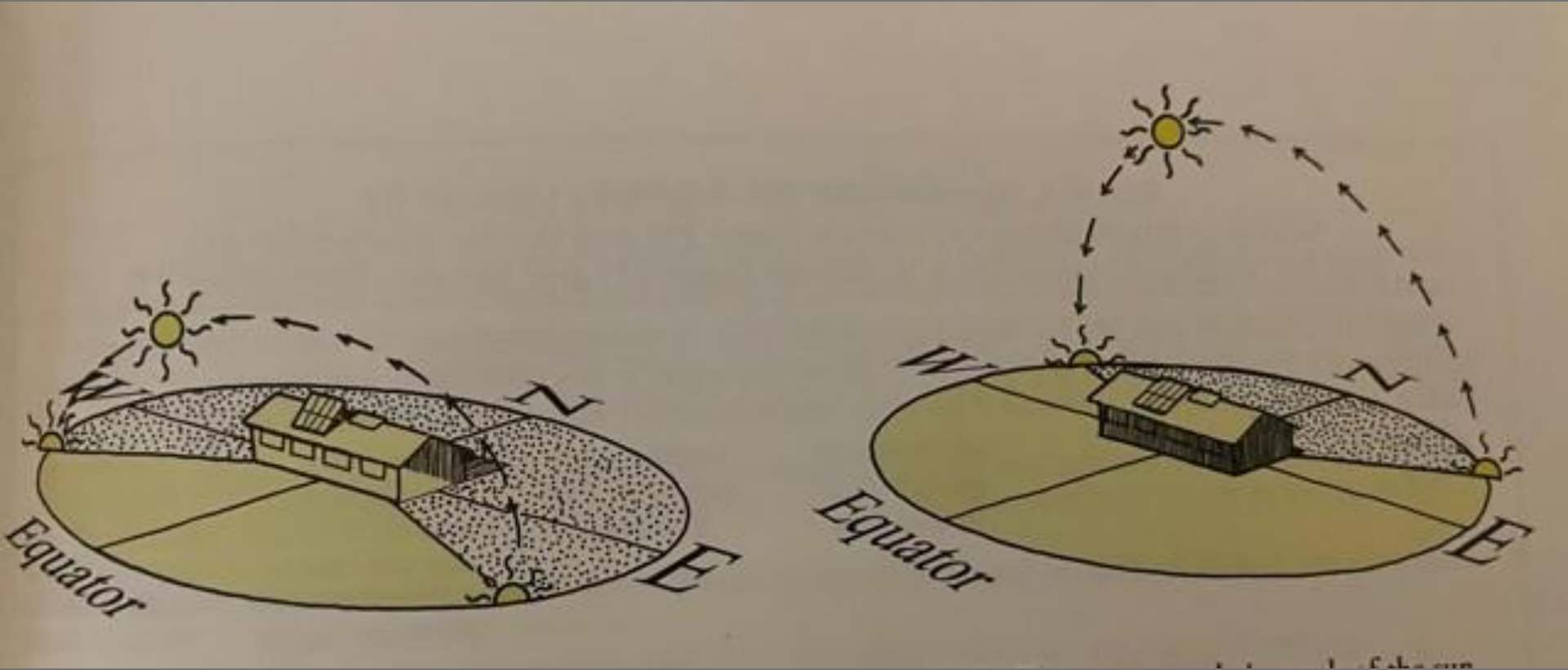
Site Planning and Prep

Garden Location

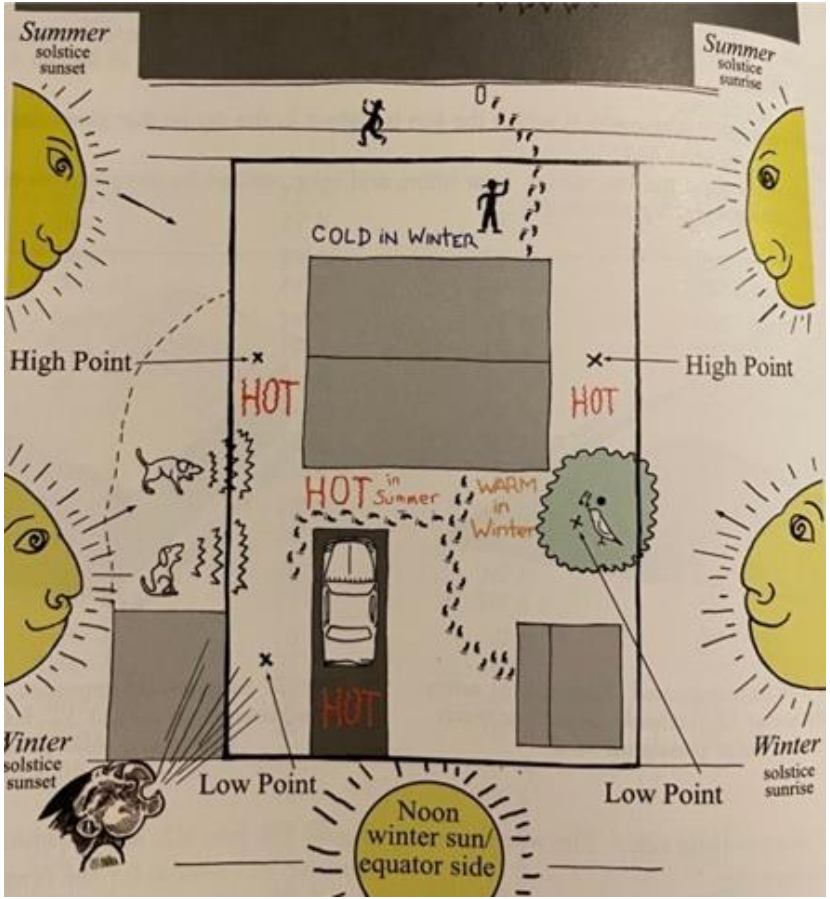
- Sun exposure & shade
- Soil
- Access to water
- How much food do you need to grow?

Base Map

- Water flow
- Foot traffic
- Utilities
- Seasonal changes in sunlight
- Seasonal changes to prevailing wind direction



Brad Lancaster's Rainwater Harvesting for Drylands and Beyond Volume One 3rd Edition 2019



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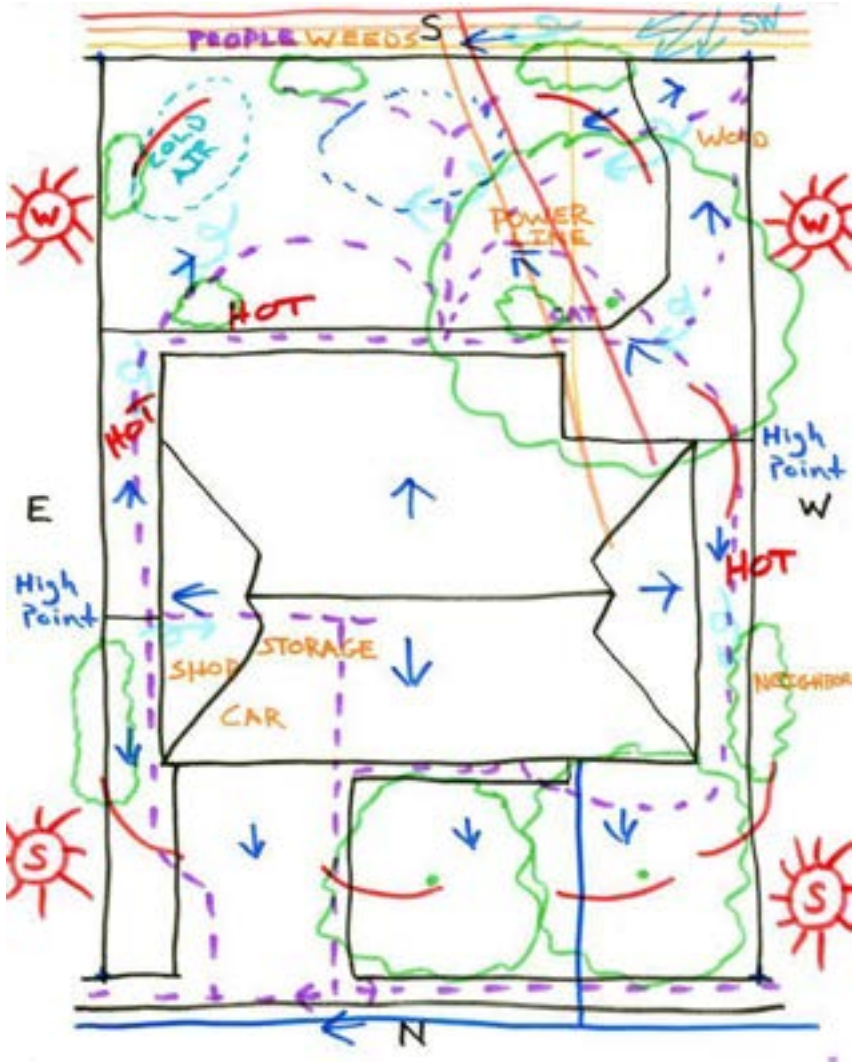
Sun Exposure

- Maximizes solar benefits for food production
- What sun exposure do your plants want?
- Full sun, partial sun, partial shade, full shade



Site Map

- Sun
- Water
- Wind
- Wildlife
- View
- Utilities
- Community

Evapotranspiration (ET)

- Evaporation + Transpiration
- Protect your garden from excessive evapotranspiration that is cause by sun and wind
- Protection – shade, wind buffers

Microclimates

Shade

Wind buffers

Where to Set Your Roots

Planting Containers

- Pros: You pick the soil, you pick the place, less bending over and knee strain
- Cons: Need for more irrigation, upfront investment

What the Plants Want

- At least 18 inches of rich soil
- Plan for drainage
- Pro tip - Cover the soil between growing seasons (mulch cover, compost, cover crop)

Where to Set Your Roots

Sunken Garden Beds

- Pros: Better moisture retention, use water harvesting principles, potentially lower upfront cost
- Cons: Need to improve desert soil, caliche

Desert Soils

- Desert Soils are generally alkaline - source of many nutrient issues
- Plan to add organic material (compost, manure)
- Dig deep to discover caliche

IRRIGATION

- Identify water sources
- Select materials for maximum water savings
- Set irrigation schedule

PRESSURE & FLOW

MUNICIPAL WATER

- 40 – 50 pounds per square inch (PSI)
- Irrigation systems may need pressure reduction

TANK WATER

- <3 PSI, depending on height of tank
- Needs irrigation components that will accommodate low pressure

Municipal Water

- Irrigation timer or controller
  - Pressure reducer
  - ½” POLY TUBING
  - ¼” POLY/SPAGHETTI TUBING
  - Flag or pressure compensating emitters

Municipal Water

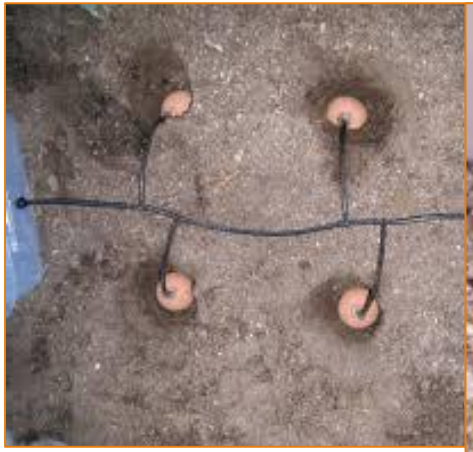
- Drip tape, gridded drip tape
  - Pressure reducer
  - ½” POLY TUBING
  - Drip tape has holes placed with varying spacing for different plan sizes

Gravity Based Irrigation

- Pressure changes with water level in the tank
- Don’t restrict the flow!
- Longer distance, slower flow

Gravity Based Irrigation

- Full port hose bib
- PVC Ball valve
- Splitter for hand watering or irrigation



Gravity based distribution

- Garden hose 3/4” or 1/2“
- Low pressure timer
- Olla balls
- Poly tubing
  - 1” polly tubing
  - 1/2” emitter & 1/2” ball valve

Gravity Based Irrigation

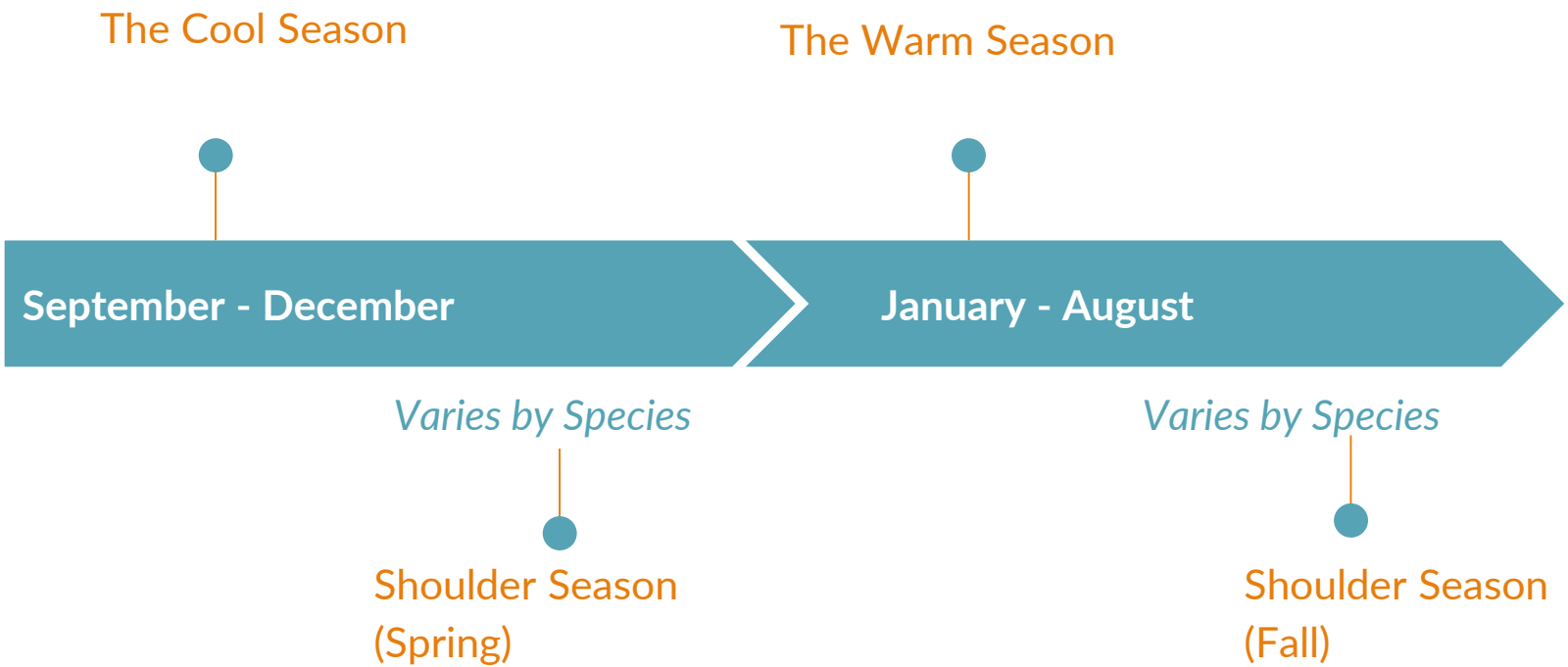
- Always in competition with your easy to use potable water!

Questions?

Seasons & Species

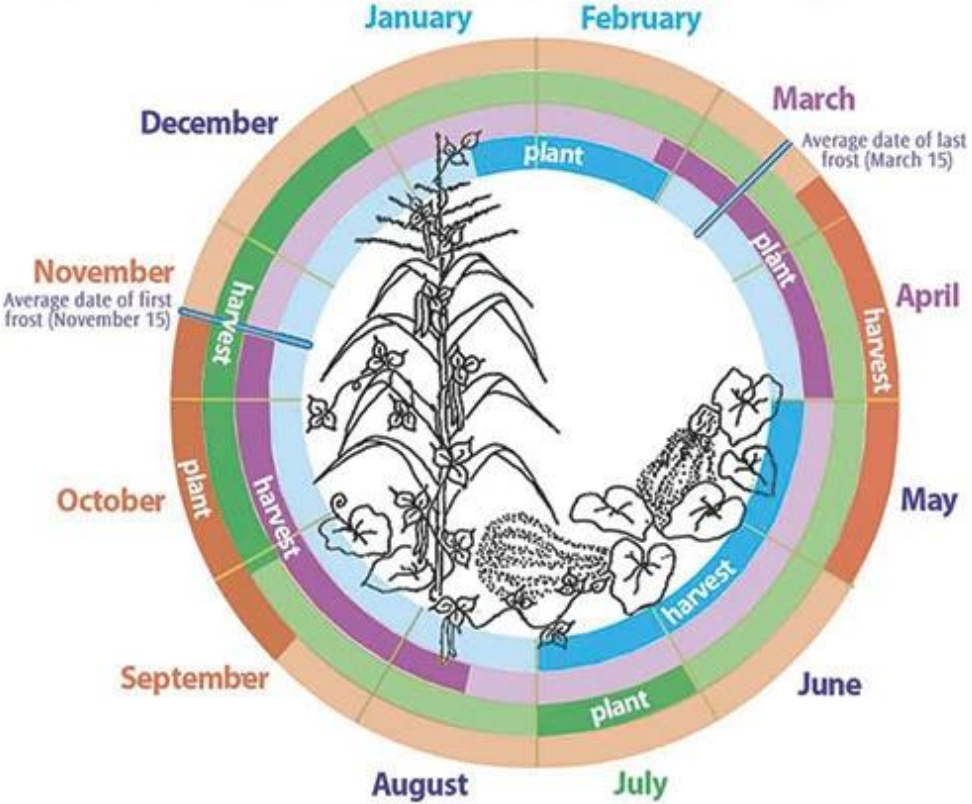
Planting Seasons

Start dreaming / planning ahead a season



Planting & harvesting in the Low Desert

Low desert includes elevations below 3500 ft in the Southwest, such as the Tucson and Phoenix metro areas. Contact your local extension agent or garden center for local planting times if outside this region.



Early Spring mid JAN – late FEB

arugula, chickpea, cilantro, fava, kale, lentil, lettuce, onion, pea, radish, swiss chard, wheat, wildflowers

Spring early MAR – late APR

amaranth, bean, chichiquelite, chile, corn, cotton, cowpea, cucumber, eggplant, gourd, herbs, melon, sorghum, squash, sunflower, tobacco, tomato (plants), tomatillo (plants), watermelon

Monsoon JULY

amaranth, bean, cowpea, corn, cucumber, devil's claw, eggplant, melon, panic grass, sorghum, squash, sunflower, tomato (plants), tomatillo (plants), watermelon

Fall late SEP – mid NOV

arugula, beet, broccoli, cabbage, carrot, chickpea, cilantro, fava, garlic, greens, kale, lettuce, lentil, onion, pea, radish, spinach, swiss chard, wheat, wildflowers

It all starts with the right seed

Annual Species

- Life-cycle is one year or less
- Typically entire plant is harvested, or plant naturally dies after one season

Perennial Species

- Life cycle lasts more than one year
- Will continue to produce food seasonally over its lifetime

It all starts with the right seed

Generic store-bought seeds / starts – the good!

- Readily available and cheap
- Accessible, healthy way to produce your own food

Generic store-bought seeds / starts – not good!

- Typically not cultivated for desert climate

It all starts with the right seed

Heirloom Seeds

- They are usually associated with a specific region or cultural group.
- They have been passed down through generations, often within families.
- They may have specific historical or sentimental value.
- They often have distinct flavors, colors, or growth habits.
- Native Seed Search has varieties adapted to the low desert

BRAG about Cool Season Crops

Brassicas

Mustard (Brassica) Family including:

- Broccoli
- Brussel sprouts
- Cabbage
- Cauliflower
- Collards
- Kale
- Kohlrabi

Root

Including:

- Carrots
- Radishes
- Parsnips
- Beets
- Turnips

Alliums

Including:

- Onions
- Garlic
- Bunching Onion

Greens

Leafy greens including:

- Lettuce
- Spinach
- Arugula
- Chard

Herbs

Including:

- Parsley
- Dill
- Mint
- Sage
- Tarragon

Common Issues

Frost

- Many cold weather crops will get frost damage, but recover (mostly aesthetic)
- Experiment with coverings / insulating structures

Premature Bolting

- Annuals put a lot of energy into producing flowers and seeds at the end of their life
- Look at recipes for flowers and collect seeds

Warm Season Crops


Peppers


Tomatoes


Eggplants

Cucurbits - Cucumber, Squash, Melon,

Common Issues

Sun / Water / Nutrient Deficiencies

- Troubleshoot plant stressors - leave it to the leaves
    - Brown center - sunburn
    - Brown margin - nutrient issue
    - Yellowing - watering issue
    - Size. I.e too small or too big - Nitrogen excess or deficiency

Pests

- Use Row Covers!
- Hand pick off
- Hose off
- Bio controls
- Botanical Pesticides

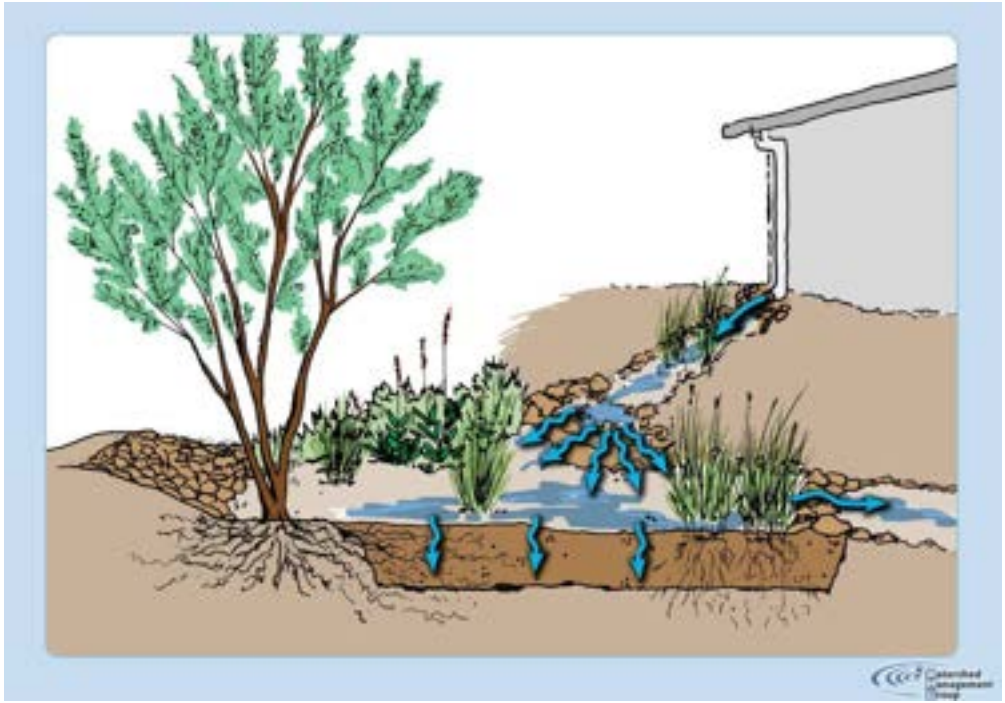
Tips for Successful Gardening

Tip 1 - Site your garden wisely

Easy access

- Place close to your home where you'll see it and interact with it
- Easy watering!
- No yard. No problem. Find a community garden near you

Tip 2 - Save Water



Consider watering by hand

- Saves water and gives you a periodic chance to check observe changed in your garden
- Water early a.m. - reduces evapotranspirative loss and maximizes photosynthetic benefits for plants

Tip 3 – Build Your Soils

Vegetable gardens want lively soils

- Bacteria, actinomycetes, fungi, molds, yeasts, protozoa, algae, and other minute organisms.
- Manure, compost, peat amendments, coco coir, organic fertilizers designated for food plants
- Bat guano, fish emulsion, liquid kelp fertilizer

Tip 4 - Support Pollination

Plant native flowering plants

- While flowering plants in general will help attract and support pollinators, native flowering plants support our local ecosystem


Starting Small

Eat Your Yard!

The Desert Can Feed You

Growing an edible food forest offers multiple benefits...

- *Produces food for people and wildlife*
- *Provides clean air, shelter and shade*
- *Conserves water and energy*

Choose native plants with differing fruiting seasons to enjoy food year-round.

Research all plants before harvesting to identify which varieties are edible and safe to eat.

Choose a variety of trees, shrubs, vines and ground cover plants. Plants of varying heights mimic a natural forest.

Group plants in clusters to maximize food production in small urban spaces.

Avoid using herbicides and pesticides

Thank you!