



Teaching Garden Video Series

Guiding Document

The Springs Preserve Teaching Garden video series was created to support the U.S. Department of Agriculture's Farm-to-School training initiative. The goal of this series is to expand the reach of the physical Teaching Garden at the Springs Preserve by providing the necessary information and tools for each school to establish a successful vegetable garden. This educational series of 10 videos details the process of selecting, building, growing, maintaining and harvesting crops.

The video series can be accessed on YouTube (<https://www.youtube.com/playlist?list=PLCWajWPKKZiRxD-7Tbs1AWtvAWjOfNF>). The videos are captioned in both English and Spanish.

VIDEO 1: SITE SELECTION

- Site Selection
 - Consider direction garden will face
 - Aim for 6 hours of direct sun per day
 - Install a sun shade structure for harsh exposure
 - Be cautious of surroundings that emanate heat
 - Use wind blocks if necessary
 - Consider a convenient location to ensure regular monitoring
- Site Planning
 - Sketch the space and note surroundings
 - Call 811 before you dig
 - Become familiar with seasonal changes on the property
 - Consider installing an irrigation system
 - Determine the use and flow of space
 - Consider construction and planting in phases

Additional Resources

Aerial views of your property are available on Google Earth.

Online applications can help you determine when your garden will be exposed to sun or in the shade. To find an app, search online for "app property sun exposure" OR "sun seeker" OR "sun surveyor" OR "sun position."

VIDEO 2: IRRIGATION

- Irrigation Types
 - Hand watering – inefficient, long time to saturate
 - Battery-powered timer on hose spigot – inexpensive, doesn't last long in heat
 - Existing irrigation system – add a valve specific to edible plant beds
 - New irrigation system – drip irrigation is an easy and effective way to conserve water
- Irrigation System Set-up
 - Know local codes and regulations before you get started
 - Need: backflow preventer, valve, filter, pressure regulator and irrigation lines
 - Inside valve box: valve, filter, pressure regulator
 - Tip: adding a union to the valve assembly will make future work and repairs easier
- Drip Irrigation Tubing
 - Supply lines: PVC is good for long distance; polyethylene systems are easiest to modify and repair
 - Use compression or barbed fittings to connect poly pipes

- Once supply line in place, microtubing or “spaghetti” line gets water to plants
- In-line emitters, end-of-line emitters, soaker tubing and Netafim are options to water plants
- 6-inch intervals for emitters are best to adequately water edible plant beds
- Tip: stick with the same brand of products to ensure fittings work well together
- Drip Irrigation Watering
 - Emitters water in gallons of water per hour
 - In-line emitters are directional, look for an arrow showing the water flow direction
 - Spray ends release more water and are adjustable, but can lose moisture to wind and evaporation
 - Ensure water is reaching sufficient depth – at least 1 foot for edible gardens
 - Make seasonal adjustments to irrigation system and perform regular maintenance
 - Tip: install a shut-off valve to have more control during system maintenance
- Irrigation Clock
 - Many types of irrigation clocks with different capabilities; indoor or outdoor
 - Once you set time and date, irrigation clock will control frequency and duration of watering
 - Clock stations will correspond to property zones/valves
 - Clock programs determine frequency or duration of watering for each valve
 - Tip: check clock regularly to ensure it is functioning properly

VIDEO 3: CONSTRUCTION

- Construction Materials
 - In-ground – lots of work with hard soil
 - Block – little to no tools, adjustable
 - Wood – wide cost range, be mindful of contents
 - Composite lumber – expensive, variety of colors
 - Metal – heat concerns
 - Plastic – affordable, break down easily
- Container Materials
 - Concrete – heavy, long lasting
 - Terra cotta – will wick away water if unsealed
 - Plastic and Styrofoam – break down quickly
 - Ensure proper soil drainage
 - Water more frequently, consider drip irrigation

Additional Resources

For demonstrations on container drainage, search online for “container gravel perched.”

VIDEO 4: SOIL & AMENDMENTS

- Compost
 - Compost is broken-down, decomposing organic matter
 - Shouldn’t be able to identify original materials
 - Don’t be afraid of critters – they are doing important work!
 - Decomposers break down materials and make nutrients available to plant roots
 - Worms are great option as they eat a lot and their castings provide direct nutrients
- Mulch Types
 - Organic mulch – wood or bark chips
 - Inorganic mulch – gravel
- Mulch
 - Wood or bark chips for edible gardens
 - Use on surface only, on top of irrigation
 - Benefits: reduces water evaporation, moderates soil temperature, improves soil
 - Don’t be alarmed by white webbing or mushrooms – a sign of happy, active soil!

- Be cautious of fungicides used to treat lumber
- Plants depend on fungal relationships to grow and even germinate
- Aggregate Materials
 - Pumice, perlite, lava rock
 - Improve pore space, moisture, air, space for roots
 - Come in different particle sizes
 - Always wear a mask when working with aggregates
- Soil Type
 - Native soil – lacks the organic material that edibles need; will need to be heavily amended
 - Topsoil – inexpensive, heavy, may not have needed nutrients
 - Potting soil – quality and contents range, may include fertilizer
 - Peat moss – once it dries out, it's hard to rewet; acidic; not a readily renewable resource
 - Cocomfiber/coir – outer husk of coconuts, neutral pH, easy to rewet
- Roots
 - Depths of roots differ for different plants
 - Most edible crops grow well in 8-12 inches of soil
 - Consider the root depth of crops before choosing containers or raised beds
 - Calculate the amount of soil needed after determining bed dimensions
- Soil Recipe Example
 - 3 parts compost = 3 buckets/shovels/wheelbarrows
 - 1 part coir = 1 bucket/shovel/wheelbarrow
 - 1 part aggregate = 1 bucket/shovel/wheelbarrow
- Soil Mix
 - Soil can be purchased pre-mixed or made to specifications
 - Determine how much compost, forest products, sand and aggregate you will need
 - Can add nutrients like kelp meal and worm castings
 - Add compost or manure to help retain moisture and nutrients, improve soil structure and increase microbial activity
 - Blend soil well when mixing
- Soil Amendments
 - Edible crops require regular input of nutrients during growing season
 - Cover crops can be left on soil level, chopped up as mulch, or tilled in to help break up hard soil, and move nutrients
 - Compost, worm castings, fish fertilizer and manure can be added seasonally or as needed
 - Fertilizers will list macro and micro nutrients – look for their NPK ratio
 - Follow directions with fertilizers to avoid salt burn
 - Plants need adequate moisture, and pH and soil temperature need to be in certain ranges for plants to uptake nutrients

Additional Resources

For NPK information, search online for “plant nutrient deficiencies.”

Local planting calendars: search online for “planting calendar las vegas” OR “Farmer’s Almanac online” OR “garden.org/apps/calendar.”

For local cooperative extension offices, search online for “coop(erative) extension Las Vegas.”

VIDEO 5: SEASONAL ROTATION

- Benefits of Cover Crops
 - Protect against soil erosion
 - Suppress weed growth
 - Increase soil fertility and quality
 - Help with pest and disease problems
 - Break hard soil and move nutrients to lower depths

- Why Rotate Crops?
 - Reduce nutrient depletion
 - Help reduce fertilizer use
 - Reduce pests, pathogens and spread of disease
 - Keeps most problems from reaching harmful levels
- Crop Rotation
 - Record-keeping is key
 - Plan for crops that live for many seasons
 - Learn which plants belong to which family
 - Alternate planting
 - Follow planting calendar
- Compost Benefits
 - Adds nutrients to soil
 - Increases beneficial organisms
 - Improve overall soil and plant health
 - Reduces disease
- Organic Amendments
 - Composted manure
 - Disease-free leaves
 - Untreated lawn clippings
 - Worm castings
 - Fertilizers
- Mulch Benefits
 - Retains moisture
 - Moderates soil temperatures
 - Suppresses weeds
- Important Items to Note
 - What you planted and when
 - Crop rotation/location
 - Age and brand of seeds
 - Pests and treatment
 - Fertilizer and compost used

VIDEO 6: SEEDS, STARTS, PLANNING & PLANTING

- Selecting, Planting & Harvesting
 - Use a local planting calendar to determine when to plant seeds or transplants
 - Cold-season crops are planted in fall; warm-season crops are planted in spring
 - Plants should have enough time to mature before the heat of summer or chill of winter
 - Make lists and sizes of mature plants to help with spacing and placement each season
 - Plants that germinate and grow quickly are great choices to plant from seed
 - The larger the plant is when put into garden, the sooner it should be harvested
 - Plant succession plants to allow for a longer harvest period rather than all at the same time
 - TIP: Most garden plants need at least 6 hours of direct sunlight to perform well
- Growing & Transplanting
 - Don't let seeds dry out as they're germinating, or they'll die
 - Cross-check seed packet info with local planting calendars to best determine plant varieties suited for the Southwest's climate
 - If starting seeds indoors, ensure they have lots of bright light
 - When handling seedlings, use the leaves and roots to move them – avoid handling the stem
 - When using bagged soil, ensure it includes aggregate like perlite
 - If growing seeds in pots, consider how deep the pots are, especially for root crops
 - Some seeds last a long time, but their viability can decrease over time

- Harden off plants to allow them to acclimate to new environment

VIDEO 7: PROTECTION

- Create Microclimates to Protect Sensitive Plants
 - Wind block
 - Shade from plants
 - Groundcover
- Protection
 - In winter, use a frost cloth with 2-10°F protection to protect plants from chill
 - In summer, use about a 30% shade cloth to protect plants from sun
 - Only target the specific pest you're trying to remove and use solution that won't harm you, the environment or other insects
 - Use bird netting to prevent birds and small mammals from damaging crops
 - Consider a lightweight cloth (row cover) to protect young seedlings from insects and birds
 - Protection from larger mammals may require a cage around plants
 - TIP: Use things like urine from predators, dried blood, rotten egg compounds and hot pepper products to protect crops from animals

VIDEO 8: HARVESTING CROPS & SEED SAVING

- Harvesting Crops
 - Dig around roots to check on development of underground plants
 - Harvest herbs regularly
 - Pick fruit crops at full maturity for best taste
 - Cut salad greens from outer most layer and allow plant to continue to grow
- Benefits to Saving Seeds
 - Save money
 - Keep growing the crops you enjoyed
 - Select those that performed best
 - Share with others
- Seed-Saving
 - If the seed is the crop itself, like peas, beans or corn, wait until full size and let dry
 - If seeds are inside, like tomatoes, peppers and squash, wait until fully mature to collect
 - Be aware of potential cross-pollination if attempting to collect pure seeds
 - Store fully dried seeds in paper envelopes in a cool, dry place (if you must use plastic, add a piece of paper towel to absorb excess moisture)
 - Label seed envelopes with the date and where the seed came from
 - TIP: Some seeds last a long time, but viability can decrease over time
- Pollinators
 - Wind and pollinators move pollen between flowers
 - Keep a healthy environment for pollinators
 - Avoid or use safer pesticides
 - Avoid systemic insecticides
 - Keep pollinators coming back by having plants that bloom continually
 - TIP: Same advice applies for treating trees and shrubs in your yard

Additional Resources

For more information on seed-saving, visit seedsavers.org.

VIDEO 9: PEST MANAGEMENT

- Common Signs of Garden Pests

- Speckled or stippled leaves
- Chewed edges or missing leaves and stems
- Tiny holes in leaves
- Large circles missing from leaves
- Sticky residue
- Pest Treatment
 - Know the type of pest you have before you treat plants
 - Start with the least harmful method (forceful spray of water, run hands along stems, or spray rubbing alcohol mix)
 - Sprinkle cornmeal, bran meal, diatomaceous earth or wood ashes around plants to kill many crawling insects
 - Use bacillus thuringiensis (BT) to ward off caterpillars
 - Incorporate sticky traps to help reduce pest numbers
 - Encourage beneficial insects like lacewings, ladybugs, preying mantises, aphid midges and wasps

VIDEO 10: MAINTENANCE

- Garden Maintenance Checklist
 - Harvesting and Planning
 - Crop Rotation
 - Prune or Stake As Needed
 - Consider Challenges
 - Note Changes
 - Pull Weeds
 - Keep Soil Healthy – Add Amendments
 - Check Irrigation System
 - Inspect and Repair Raised Beds or Pots
 - Maintain Tools
 - Keep Records

