

Vegetable Gardening

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Garden “Architecture”

- Berm garden
 - Planting area higher than the pathways
- Raised bed garden
 - A “berm” to the extreme
 - Critter resistant
 - Elderly or handicap accessible
- Waffle garden
 - 3-sisters
 - Companion planting
 - Evolution to square-foot
- Basin garden
 - Planting area lower than the pathways
- “French Intensive” garden



Berm Garden



- Plants are kept above path level
- Borderless
 - Wet climates
 - Minimizes water uptake
 - Desert climates
 - Berm edge dehydrates
- Bordered
 - Tidy
 - Borders do not dehydrate

Raised Bed Garden *Or Containers*



- Easy on back
- Can be made wheelchair accessible
- Limited space
- Ideal width
 - 2-ft with 1-side access
 - 4-ft with 2-side access
- Critter resistant

Raised Bed Garden Cattle Water Tanks



Raised Bed Garden More Ideas

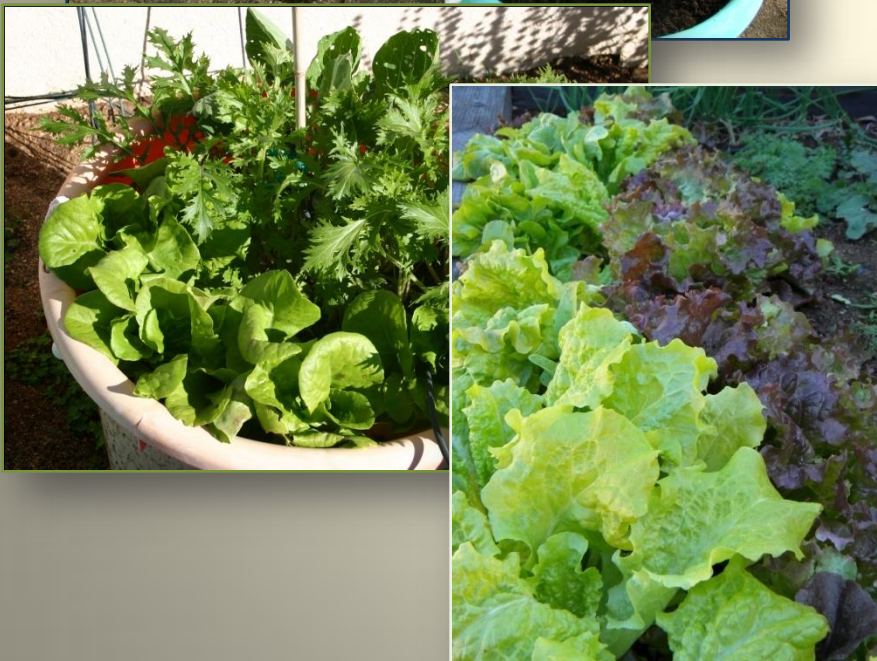


Soil for Containers

- Create a mix that
 - Drains well ~ sand and/or pumice
 - Absorbent ~ compost
 - Lightweight ~ pumice or perlite/vermiculite
 - Free of pests & Disease ~ sterilized
- Special needs
 - Starting seeds ~ peat moss + wetting agent

Here's an Idea “Salad Bowl”

- Small containers can produce many salads!
- Can be incorporated into a patio container garden
- Plant a mix of salad greens
 - Colorful
 - Tasty
- Pick leaves from base of plant



Container Maintenance

- Water & fertilizer routine specific to plant needs
 - Hand watering
 - Battery meter with drip is a great option
 - Liquid or time-released fertilizer work best
- Flush every month or two
 - Avoids salt build-up
 - Do not use “dishes” to capture excess water
- Re-pot trees every 2 to 3-years
 - Replenish at least a third to a half of the soil
 - Screen out old root material

Waffle Garden

- Used by indigenous desert inhabitants
- Planting area is below pathways
- Ideal for arid gardens
 - Captures available rain
 - Retains moisture at plant roots
- 2-foot square
 - Amend soil in depression
 - Plant each depression
 - Mulch to reduce evaporation



Waffle Garden

“Three Sisters”

- Plant corn
 - Pollinates easily in cluster
- Plant beans ~ *tepany*
 - Vines climb corn stalks
 - Provide nitrogen
- Plant squash
 - Living “mulch”
 - Cools soil
 - Retains moisture
 - Retards weeds



Companion Planting

An Element of “Three Sisters”



- Different crops planted in close proximity
- Assist each other
 - Nutrient uptake
 - Flavor enhancement
 - Pest control
 - Pollination
 - Other factors to increase productivity

See Wikipedia for a table

Basin Garden

- The opposite of a berm garden
 - Avoids edge dehydration of the berm
- Paths elevated above planting area
- Shares benefits of the waffle garden
 - Captures rain fall
 - Directs moisture to roots



French Intensive Gardening

- aka:
 - Biodynamic garden
 - Permaculture garden
 - Small space garden
- 1890's outside Paris
- Work with nature
 - Healthy, vibrant plants
 - Smaller space
 - Less water
 - Plant leaves touch



Gain Space

Grow in the Vertical



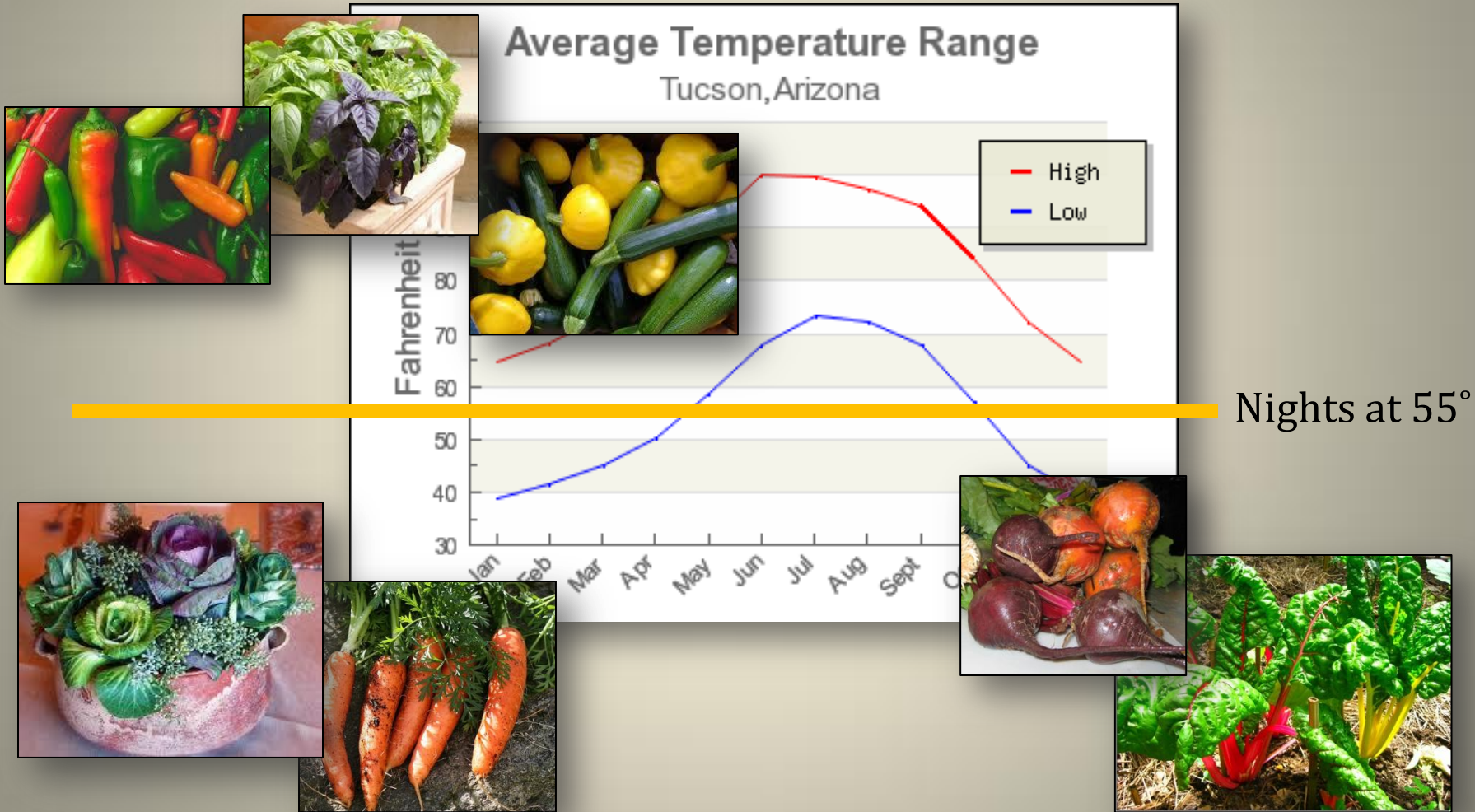
- Pole beans & peas
- Melons
- Cucumbers
- Squash

Effective use of a Temporary Trellis



- Inexpensive
- Attractive
- Reusable
- This one is a simple curve of masonry reinforcing wire

Cool versus Warm Season



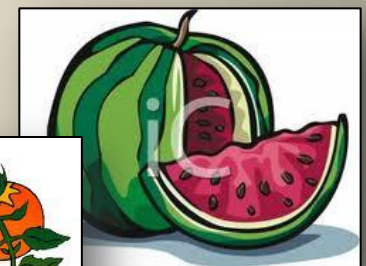
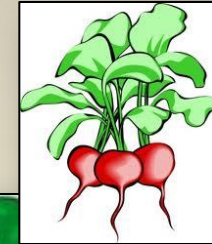
Cool versus Warm Season

We eat *cool season*
plant **parts**

- Leaves, stems, roots

We eat *warm season*
plant **fruit**

- Parts that contain seed



Seed Sources

- Lots of options!
- GV Nursery has some in stock now
- Westwind seeds
 - Local supplier/helpful
- Native Seeds / SOURCE
 - Tucson store and on-line
 - Heritage vegetables



Generally you will want harvest times < 58-days.

Fruit Trees

- Serve a triple purpose
 - Food source
 - Shade
 - Beauty
- Consider espaliered for a small garden
- More options than citrus
 - Some better suited for the area



What to Purchase

- How cold it gets in your yard
- How much room you have in your landscape
- When you want to harvest
- What you like to eat ~ or use for juice or in recipes



Chilling Requirement

- Accumulation of hours < 45° F and > 32° F
 - > 60° is a loss of hours
- Select for < 600 hours
 - 300-400 hours is better
 - Insufficient hours results in poor bloom
- Limits our selection of fruit species
 - No persimmon, nectarines or cherries
 - Limits varieties within a species
- Early maturing best
 - Avoid June insects
 - Risk of frost damage

No cherries 😞!



Degrees Brix (°Bx)

- Brix can be used to quantify sugar content of fruits and vegetables
- The higher the °Bx the higher the flavor
- The higher the °Bx the longer the shelf-life
- Fresh fruits and vegetables picked at their peak are beneficial to your health
 - 40% of nutritional value can be lost in 3 days
 - A huge advantage to growing things to eat in your own garden!

Beneficial Nematodes



*Heterorhabditis
bacteriophora*

Hb attacking beetle larvae



- *Hb* is an entomopathogenic nematode mutually associated with enteric bacterium, *Photobacterium luminescens*, used globally for biological control of insects.

Minute Pirate Bug

Orius insidiosus

- A common general predator in field crops
- Emerge early in spring
- Diet consists of a variety of small pests including thrips, whitefly, spider mites, aphids, psyllids, lygus bugs, small caterpillars and insect eggs
- They particularly love thrips and are known to attack the adult thrips; you may even see them from time to time with thrips stuck on their rostrum



Orius kill for sport and are good indoors and outdoors.

Every stage of the Orius is a predator of pest insects.

Green Lacewing

Chrysoperla sp.



Adult stage is a minor pollinator



Larval stage is the predator

- Exceptional addition to IPM program
- Green Lacewing larvae are voracious eaters of the eggs and immature stages of many soft bodied insect pests

Several species of aphids, spider mites (especially red mites), thrips, whitefly, leafhoppers, some beetle larvae, eggs and caterpillars of pest moths, and mealybugs

Larvae will eat for 2-3 weeks, spin a cocoon, and 10-14 days later, emerge as adults.

Available in egg stage, larval frames, adults

Ladybugs

Hippodamia convergens

- Voracious predator of aphids, mites, thrips, whitefly, mealybugs and more

Ladybugs are shipped to you in the adult stage. Each adult consumes about 5,000 aphids. Within 8 to 10 days of release, each female ladybug lays 10-50 eggs daily on the underside of leaves. In 2-5 days the larvae emerge as dark alligator-like flightless creatures with orange spots. The larvae eat 50-60 aphids per day.



After 21 days they pupate and adults emerge in 2-5 days, completing the cycle.



Under ideal conditions (temperature 61-82° F; ladybugs won't fly when 55° F or lower) several generations may be produced.

If not released immediately, you may store ladybugs for 1-3 weeks at 35-45° F.

Beneficial Insects

- When we go to the community garden I'll discuss these in more detail

