PLANTING and GROWING COOL-SEASON VEGETABLES at HOME

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COACHELLA VALLEY WATER DISTRICT

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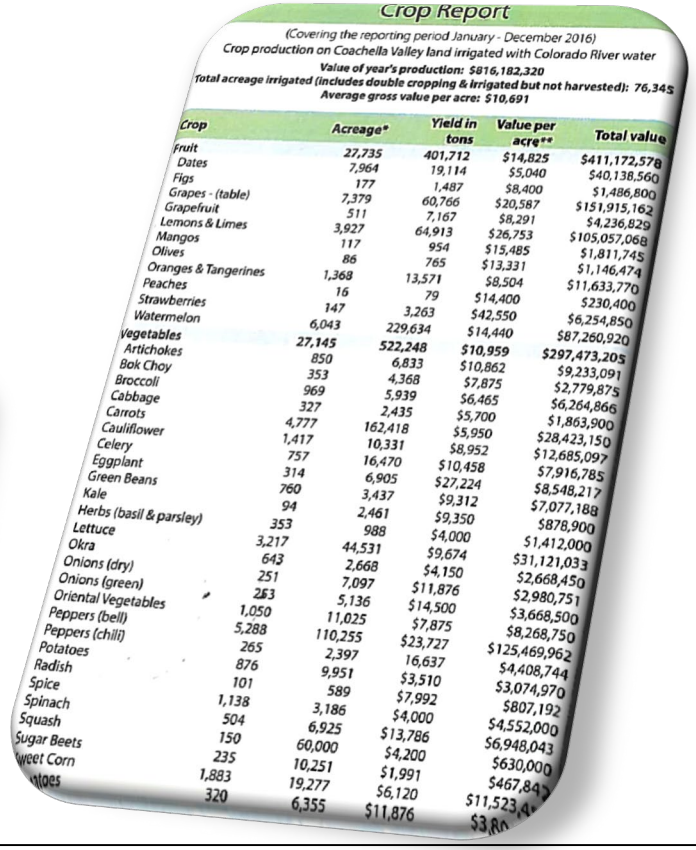
What Do You Need to Know?

- What Vegetables can I grow here? And When?
- Where can I get my plant material?
- What special tools do I need?
- Planning Your Garden
- Soil Preparation
- Planting a seed or a transplant
- Mulching
- Irrigation
- Fertilization
- Pest Control
- Harvest and Enjoy

What Vegetables Can You Grow in the Coachella Valley? **And When??**

- Check out the county Crop Report for the Coachella Valley in CVWD's Annual Report
- The Perennials
- **Cool Season Vegetables**
- Warm Season Vegetables



Crop Report

(Covering the reporting period January - December 2016)

Crop production on Coachella Valley land irrigated with Colorado River water

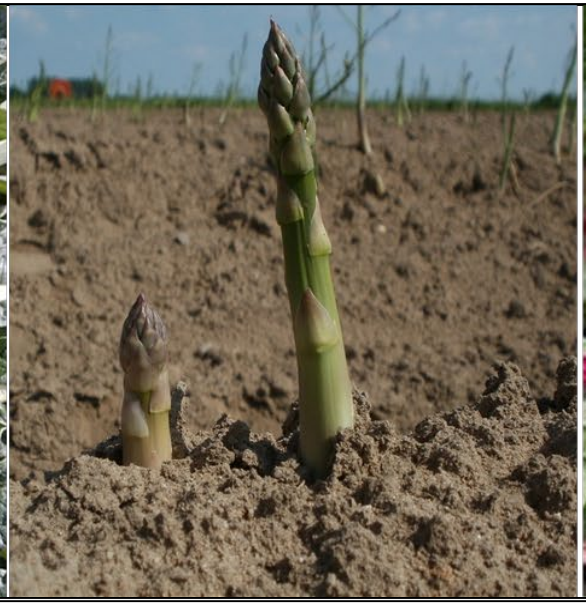
Value of year's production: $816,182,320

Total acreage irrigated (includes double cropping & irrigated but not harvested): 76,345

Average gross value per acre: $10,691

Crop	Acreage*	Yield in tons	Value per acre**	Total value
Fruit	27,735	401,712	$14,825	$411,172,578
Dates	7,964	19,114	$5,040	$40,138,560
Figs	177	1,487	$8,400	$1,486,800
Grapes - (table)	7,379	60,766	$20,587	$151,915,162
Grapefruit	511	7,167	$8,291	$4,236,829
Lemons & Limes	3,927	64,913	$26,753	$105,057,068
Mangos	117	954	$15,485	$1,811,745
Olives	86	765	$13,331	$1,146,474
Oranges & Tangerines	1,368	13,571	$8,504	$11,633,770
Peaches	16	79	$14,400	$230,400
Strawberries	147	3,263	$42,550	$6,254,850
Watermelon	6,043	229,634	$14,440	$87,260,920
Vegetables	27,145	522,248	$10,959	$297,473,205
Artichokes	850	6,833	$10,862	$9,233,091
Bok Choy	353	4,368	$7,875	$2,779,875
Broccoli	969	5,939	$6,465	$6,264,866
Cabbage	327	2,435	$5,700	$1,863,900
Carrots	4,777	162,418	$5,950	$28,423,150
Cauliflower	1,417	10,331	$8,952	$12,685,097
Celery	757	16,470	$10,458	$7,916,785
Eggplant	314	6,905	$27,224	$8,548,217
Green Beans	760	3,437	$9,312	$7,077,188
Kale	94	2,461	$9,350	$878,900
Herbs (basil & parsley)	353	988	$4,000	$1,412,000
Lettuce	3,217	44,531	$9,674	$31,121,033
Okra	643	2,668	$4,150	$2,668,450
Onions (dry)	251	7,097	$11,876	$2,980,751
Onions (green)	253	5,136	$14,500	$3,668,500
Oriental Vegetables	1,050	11,025	$7,875	$8,268,750
Peppers (bell)	5,288	110,255	$23,727	$125,469,962
Peppers (chili)	265	2,397	$16,637	$4,408,744
Potatoes	876	9,951	$3,510	$3,074,970
Radish	101	589	$7,992	$807,192
Spice	1,138	3,186	$4,000	$4,552,000
Spinach	504	6,925	$13,786	$6,948,043
Squash	150	60,000	$4,200	$630,000
Sugar Beets	235	10,251	$1,991	$467,845
Sweet Corn	1,883	19,277	$6,120	$11,523,4
Tomatoes	320	6,355	$11,876	$3,80

The Perennials


- **Artichokes**, Asparagus and **Rhubarb**
- Edible Ornamentals
- Plant once: Theoretically lasts forever, but here only asparagus can make it through our summers. Artichokes and Rhubarb should be considered cool season annuals
- Bermuda Grass often invades asparagus beds
- Aphids love artichokes

Characteristics of Cool Season Vegetables

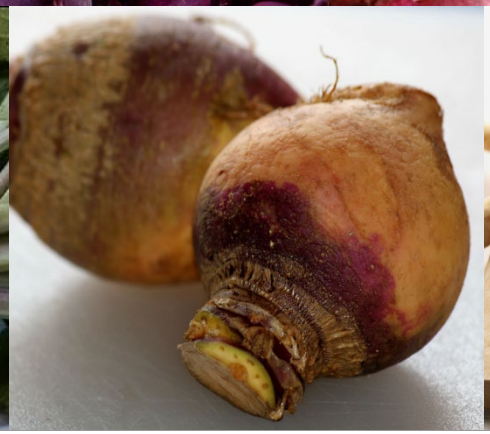
- Frost Tolerant
- Harvest a root, stalk, leaf or an immature inflorescence (Flower)
- Shorter growing season (35-75 days)
- Plant between September – February
- These are the vegetables your mother made you eat

Of Additional Interest: “Bolting”

- **“Bolting”** going to flower.
  - Plant immediately becomes bitterly inedible.
  - Your January/February vegetable plantings should be a “Slo-Bolt” variety
  - When in doubt whether to harvest a Spring cool-season vegetable or not, harvest it






Vegetable Root Crops

- Beets, carrots, onions, parsnips, radish, rutabaga, turnip, etc.
- Highest yield per square foot of any other grown vegetable

Celery

- The stalk crop
- Needs to be “blanched” near maturity by piling up soil around the base of the plant and loosely tying the stalks closer together to cut off sunlight.

The Leaf Crops

- Vitamin Factories: Lettuce, Spinach, Swiss Chard, etc.
- Head lettuce does not head up well here (Light soils?)






The Cole Crops

- Broccoli, Cabbage, Cauliflower*, Brussels Sprouts, Kohlrabi and Kale
- Big Plants: Heavy Feeders. Pre-Plant N-P-K (Complete fertilizer) + 1-2 side-dressings of Nitrogen.
- *Needs to be blanched by covering with outer leaves

The Cool-Season "Legume" Crop

- Legumes: symbiotic relationship with a soil bacteria that trades soil nitrogen for plants sugar
- Many legumes:
  - Alfalfa
  - Clover
  - Mesquite trees
- Vegetable family:
  - Peas (cool season)
  - Beans (warm season)

These plants do not require nitrogen fertilizer. You can buy inoculant and coat your seed with it before planting.

Cool Season Legumes: Garden Peas (Can be bush peas or pole peas)

- Garden Peas

- Inoculant

Where do I get my plant material?

- Box stores and nurseries
  - selection is very limited and both transplants and seeds are often treated with systemic insecticides.
- Instead: Use online seed
  - inexhaustible selection
    - open-pollenated
    - Heirloom
    - non-GMO
    - non-treated seed
- For instance
  - Johnny's Selected Seeds
  - Baker Creek and Heirloom Seeds
  - Urban Organic Farmers (monthly subscription)

For transplantable veggies, get a seeding growth kit from a box store and grow your own.

What Special Tools Are Helpful?

- Spading fork - Mix soil amendments into the soil
- Seedling grow kit - Grow transplants from seed
- Planting Stick – seed planting aid.
- Bulb Planter – Makes planting hole for transplants
- Knee Pad – Takes the pain out of prolonged kneeling
- Pole and Hand Hula Hoe + file = Best weeders
- Maximum-Minimum Thermometer - Frost
- Soil Thermometer – Helps in seed germination

CV Garden Soil Preparation Recipe

- Locate a good site:
  - Full sun
  - Close proximity to water supply
- Don't have a good site?
  - Try growing vegetables in containers
- Stake the 4 corners
- Pre-Irrigate and check for good drainage
- Remove noxious weeds
- Top dress the following:
  - 2" of organic soil amendment
  - A Complete (N-P-K) fertilizer(slow release) *
  - Soil Sulfur* (To lower the Ph)
  - A Micronutrient fertilizer* with iron and zinc (seaweed extract good choice)
- Mix into soil with a spading fork or a rotor tiller

* As per label recommendations.

Planning Your Garden

Do the Paperwork:

- What can you grow now? (See Low-Desert Planting & Harvest Calendar handout)
- Consider Companion Planting (See chart handout)
- Consider square foot gardening (See handout)
- Where are you going to put them? Draw a scaled map (See sample map handout)
- Practice Succession Planting
- Keep your map and practice crop rotation for next growing season

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Planting Seeds and Transplants

Planting Seeds

DON'T DO THIS!

Instead plant the thinning distance:

- Package says "Plant your seed every 2" and then thin to every 4" once the seedlings emerge
- Just plant the 4" thinning distance and replant any gaps.

Transplanting

Transplant Fertilizer

For making the planting hole

Mulching

- Conserves water, adds organic matter to soil, smothers weeds, food for earthworms, etc.
- Use straw, not hay which contains weed seeds
- Cools soil which is a plus in the summer, but in the winter keeps the soil temperature from warming and re-radiating heat for frost protection

Irrigation

- Very Difficult to irrigate efficiently
  - Multiple species grown in same location (polyculture)
  - Changing plant size
  - Changing weather

- Solution
  - Irrigate the garden soil, not the individual plants
  - Test soil when surface looks dry
  - Grab a handful of soil from the top 2” and try to squeeze it into a ball
  - If you can form a ball and roll it around the palm of your hand without it crumbling, you are OK. If you can’t, time to irrigate
- How long?
  - Do a simple can test by placing a few straight sided cans and run your sprinklers until one inch of water is caught in all cans. Now you know how long to run your sprinklers to put down 1” of water

Catch-Can Test Container

- Run your sprinklers until a depth of 1” is caught and record the time
- Put down 1” of water down per irrigation
- If your plants should any signs of stress (droopy , curled or wilted leaves), irrigate immediately

Fertilization

- Your soil preparation recipe should be sufficient to grow all of your vegetables to maturity except for sweet corn and your “Heavy Feeders” who would appreciate a mid-season side dress of nitrogen fertilizer banded in-between the rows
- If, however, your should signs of nutrient deficiency (yellowing leaves), side-dress or foliar feed right away

Side Dressing

- Make a shallow furrow about 6-8” from the base of the plant
- Apply the fertilizer in a strip as per label directions
- Re-fill the furrow with the disturbed soil
- Water it in

Foliar Feeding with a hose sprayer

- Follow the fertilizer container directions. (some plants don't like water on their leaves, i.e. tomatoes)

Pest Control I. (Insects)

- This is a whole course in itself
  - Main insects that we deal with here are
    - Caterpillars –especially the cabbage looper and tomatoe hornworm
    - Aphids
- Cabbage looper and other caterpillars
  - BT: bacillus thuringiensis ‘Dipel’
- Aphids
  - Spraying with an insecticidal soap spray like Safer’s Insecticidal Soap

Cabbage Looper

Aphids

Know Your Bugs! Not ALL Bugs are Bad!

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Good Bugs!
They love protecting your garden!

Mason Bees

Pest Control II. (Diseases)

- This is also a whole course in itself
  - Generally, by the time a vegetable disease reveals its symptoms, it is too late to save the plant
  - The best response is to immediately isolate the sick plant by pulling it, placing it in a paper bag and putting it in the trash. Don't leave it in the garden
  - Remember where the disease manifested itself and plant a different species there next time (Crop rotation)
- *Example: follow tomatoes with carrots planted where the tomatoes were growing!*


Whitefly
Greenfly/Blackfly (Aphids)
Spots or Patches on leaves
Grey Mould (Botrytis)
Powdery Mildew
Red Spider Mite – leaf bronzing
Leaf Fall
Mealy Bug
Rust
Yellowing Leaves

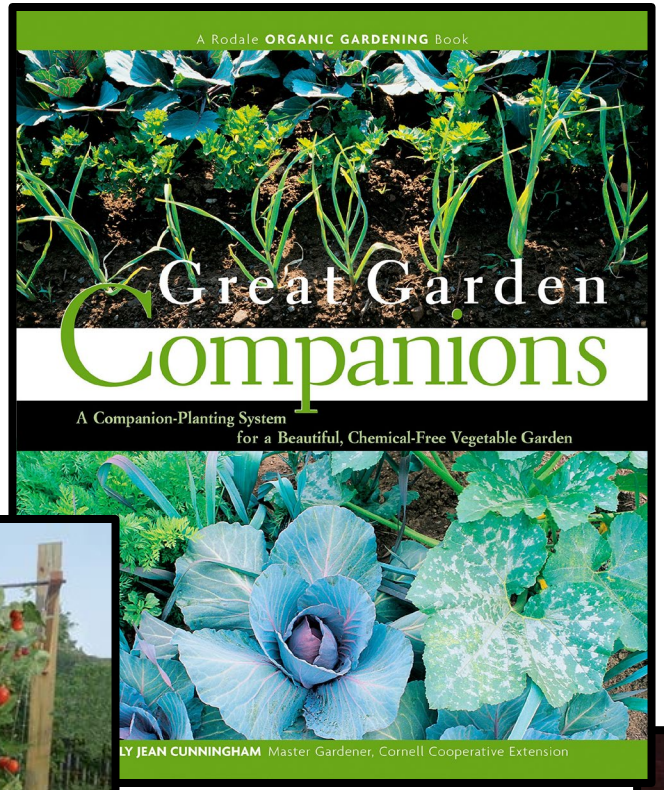
Harvesting & Storing

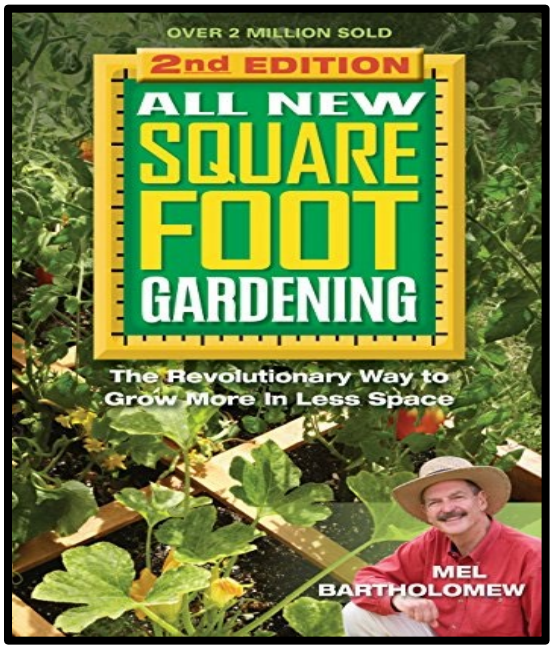
- Picking vegetables

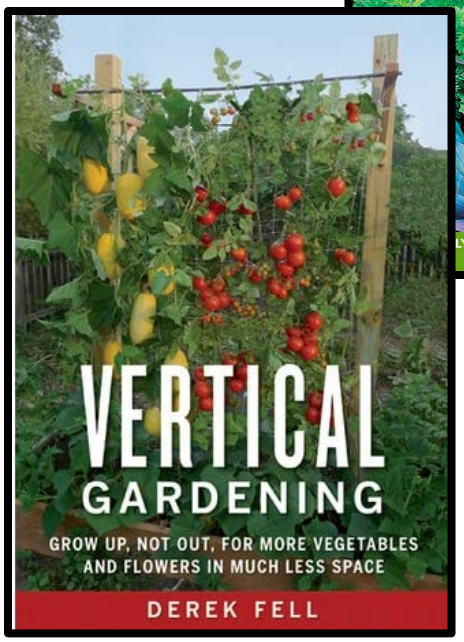
  Early morning = best flavor

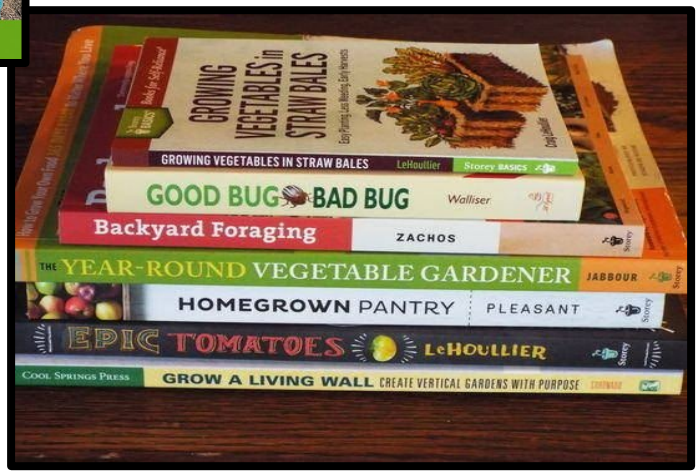
- Keeping vegetables fresh

  Store at proper temperatures


A Rodale ORGANIC GARDENING Book
Great Garden
Companions
A Companion-Planting System
for a Beautiful, Chemical-Free Vegetable Garden
LY JEAN CUNNINGHAM Master Gardener, Cornell Cooperative Extension


OVER 2 MILLION SOLD
2nd EDITION
ALL NEW
SQUARE
FOOT
GARDENING
The Revolutionary Way to
Grow More In Less Space
MEL
BARTHOLOMEW


VERTICAL
GARDENING
GROW UP, NOT OUT, FOR MORE VEGETABLES
AND FLOWERS IN MUCH LESS SPACE
DEREK FELL


GROWING VEGETABLES in STRAW BALES
GROWING VEGETABLES IN STRAW BALES
GOOD BUG BAD BUG
Backyard Foraging
ZACHOS
THE YEAR-ROUND VEGETABLE GARDENER
HOMEGROWN PANTRY
PLEASANT
EPIC TOMATOES
LeHOULLIER
GROW A LIVING WALL CREATE VERTICAL GARDENS WITH PURPOSE

QUESTIONS ?

Thank You!

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