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Quick Start Guide

The 5 Fastest Ways to Improve Your Organic Garden

Special Note:

Now accepting members for 2021 Garden Club!

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Scroll Down for 46 pages of TIPS

If you integrate the methods
from this guide into your food garden, you can
double your yields and **cut your work in half**.
It really is possible.

The following information will give you an introduction to organic, bio-intensive methods I've used in my home food garden for over 16 years.

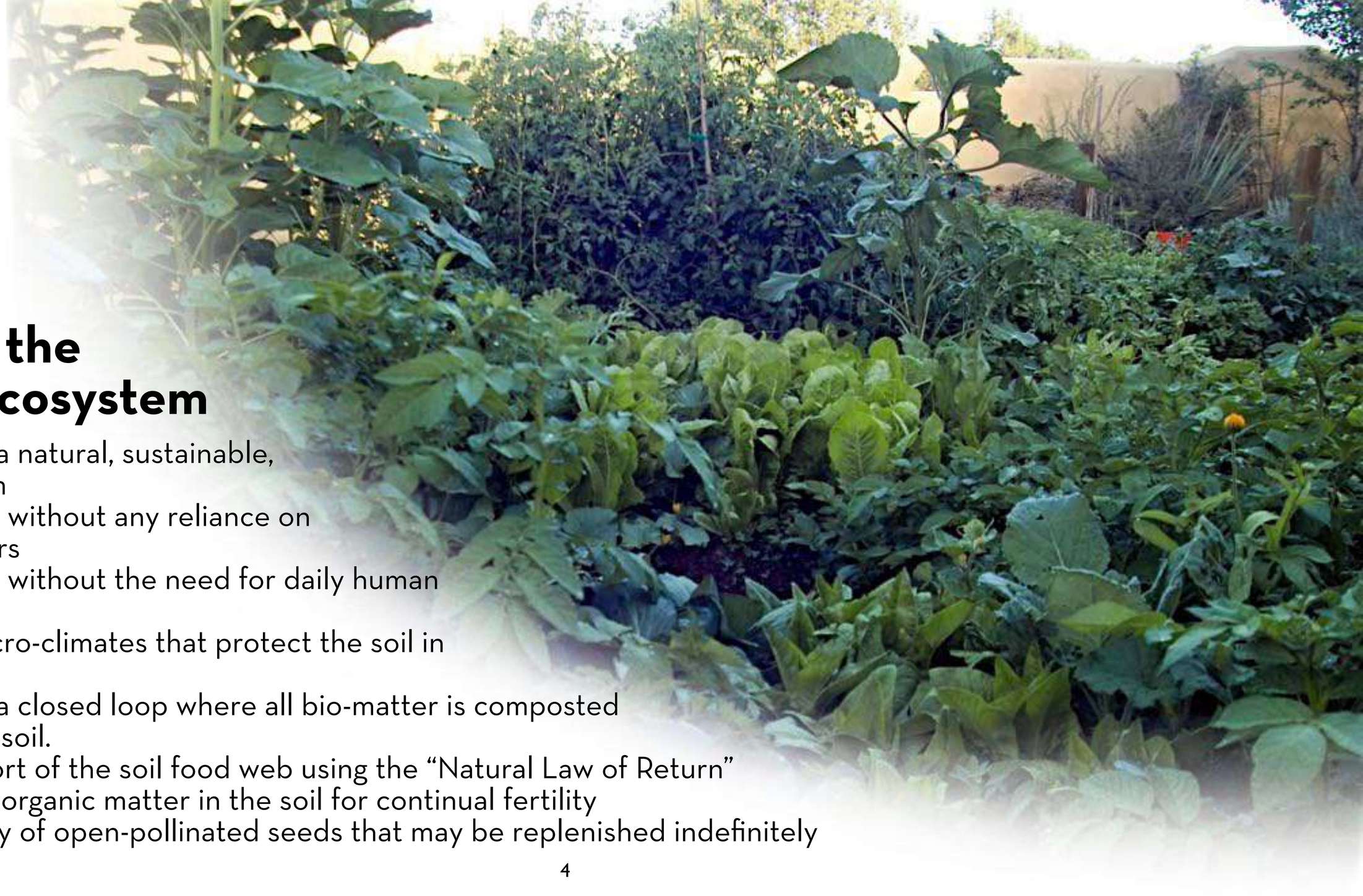
Following this natural systems approach is the key reason I get consistently high yields of nutrient-dense food. The methods save water, labor, and build soil each year, and allow me to take off during the growing season for weeks at a time due to a simple timer and drip irrigation.

My growing season in Colorado is only around 120 days, so timing is tight, but because these methods create such robust growth with living soil, I produce over 1000 pounds of organic food in my yard during those 120 days. This happens year after year. Just integrating these methods into your own gardening efforts can double your yields, while cutting your labor in half. Come join the fun!

-Tom Bartels, GrowFoodWell.com

Goals for the Garden Plants

- They need an uninterrupted growth cycle from germination to harvest.
- They need ideal growing conditions, with deep beds, aerated soil, compost, and intensive spacing.
- They need access to nutrient-rich living soil.
- They need to be planted on time so the entire growing season can be used.
- They need access to the benefits of microorganisms in the soil.
- If cared for, they should reach their full genetic potential in your backyard.



Goals for the Garden Ecosystem

- The creation of a natural, sustainable, living ecosystem
- Plants that grow without any reliance on artificial fertilizers
- Plants that grow without the need for daily human intervention
- Living mulch micro-climates that protect the soil in each bed
- The creation of a closed loop where all bio-matter is composted and returned to soil.
- Continual support of the soil food web using the “Natural Law of Return”
- A density of 6% organic matter in the soil for continual fertility
- An annual supply of open-pollinated seeds that may be replenished indefinitely

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To be interested in food but not in food production is clearly absurd.
-Wendell Berry

Initial Garden Priorities

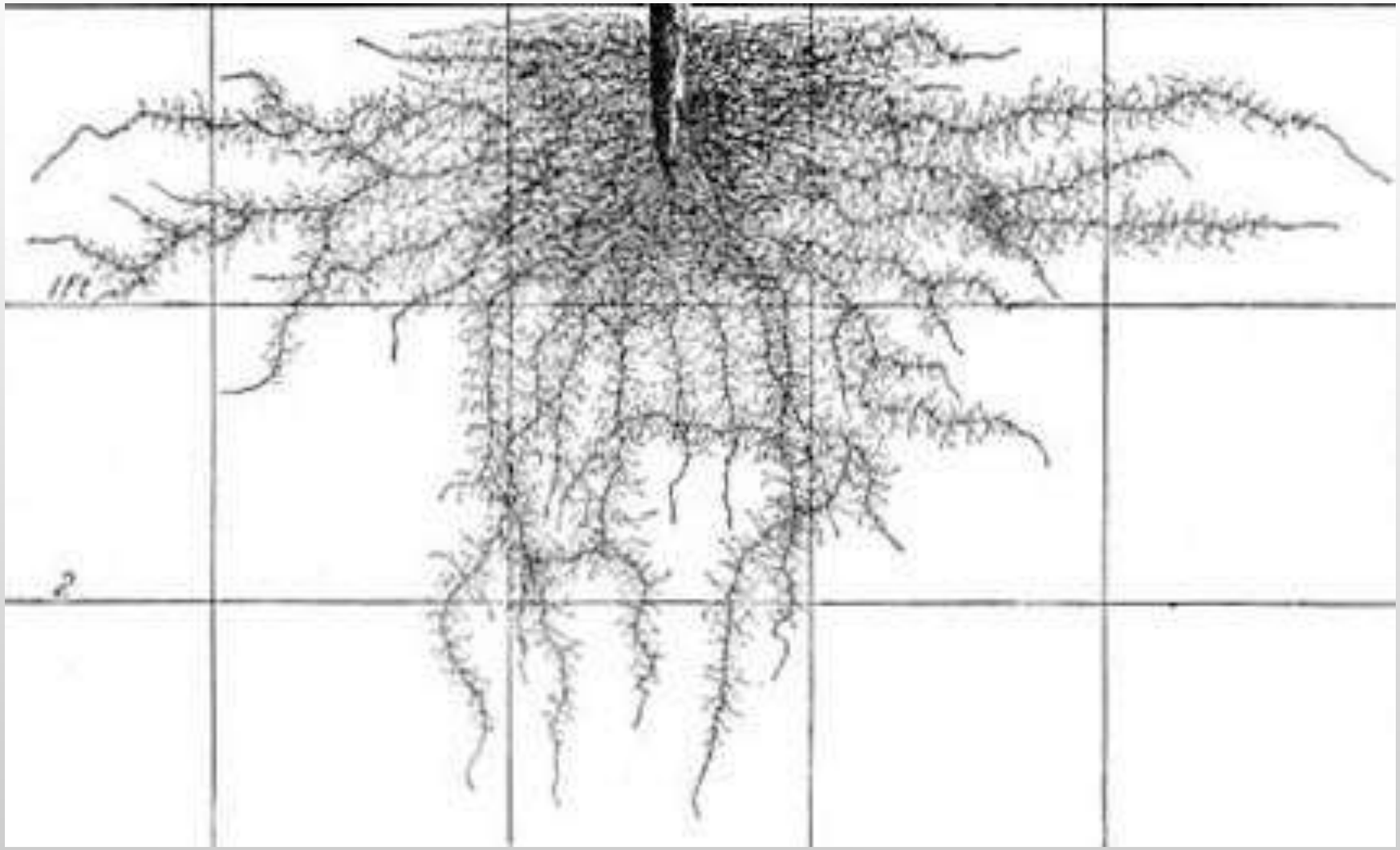
- Avoid the use of synthetic chemicals.
- Garden location should be as close to house as possible with 6 hours of sun exposure during growing season.
- Locate in flat area with good drainage, with beds aligned from north to south.
- Fence the garden from unwanted pets and pests.
- If you want a baseline soil test, contact your county extension office. But it isn't

Where is Your Main Focus?

When there is a problem... Are You Looking Deeper?

Many food gardeners focus on what's going on above the soil in their gardens, and react to it above ground, with regard to pests, leaves, top growth, etc... And that makes sense, because it's the part of the growth cycle we can SEE, so we react to it.
But that's usually just a symptom...

...What happens
below the ground
is the biggest key to success.



Cabbage Root Profile

Roots...

have relationships with:

Bacteria
Fungi
Protozoa
Nematodes
Micro-arthropods

Magic happens down there.

Notice the “Root Hairs.” This is key to healthy plants.

<u>Roots need:</u>

Loose, living soil
Minerals and Nutrients
Water
Oxygen


The Five Fastest Ways to Improve Your Organic Garden
#1: Stop Planting Your Garden in ROWS
exposed soil
exposed soil
exposed soil
Rows Lead to:
Compacted soil
Weeds
Less plantable space
Temperature swings
Increased evaporation

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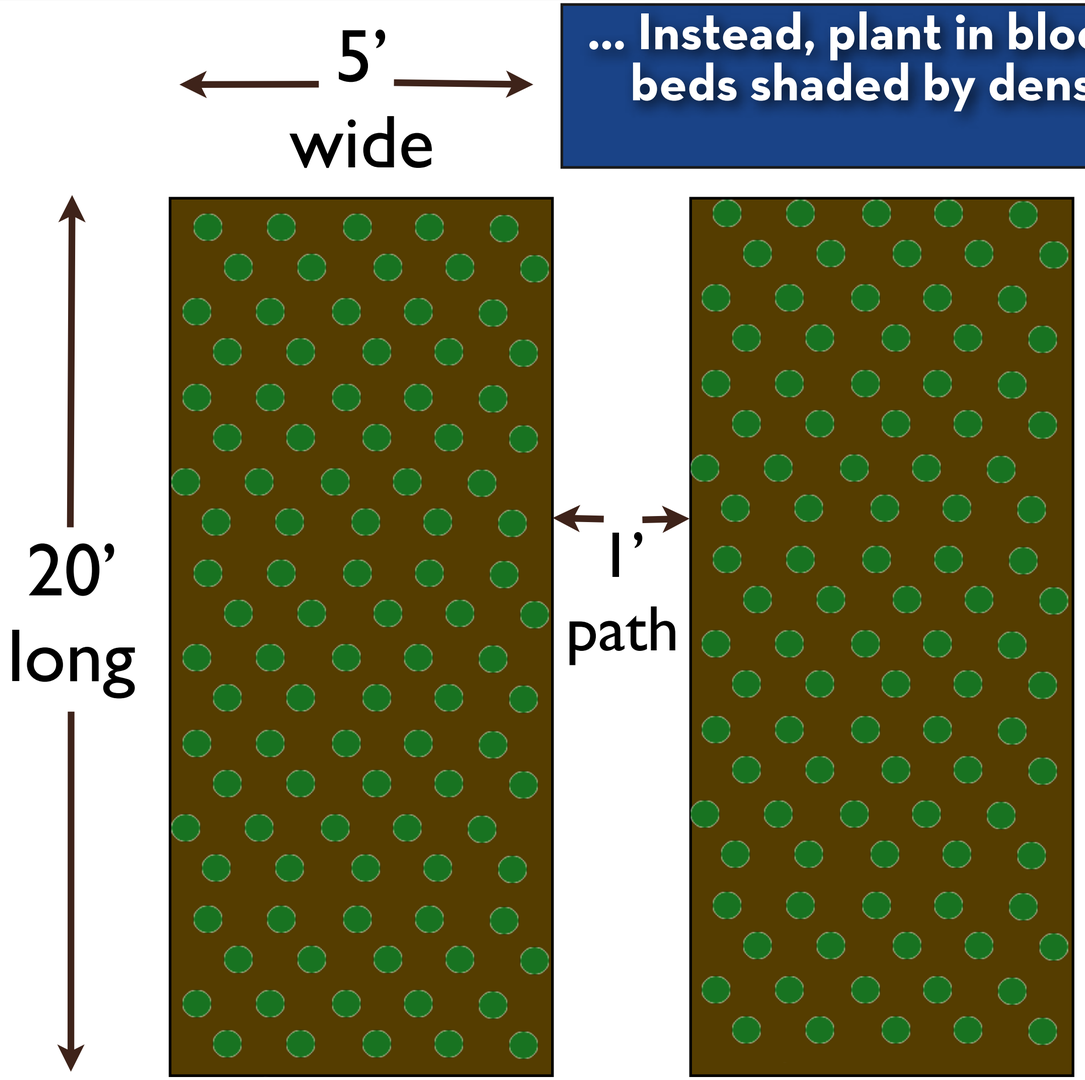
... Instead, plant in blocks using wide beds shaded by dense plantings.



No walking on beds, only pathways.

Beds are planted in blocks

In this example, each bed is 100 square feet.

Top view of two bed system, 24” deep


18”
Between Beds


Example of in-ground raised beds planted in blocks
Plant canopy covers entire bed. This creates a micro-climate that protects the soil.


Notice how little soil is exposed inside each bed.
Rows between beds only need to be 18” wide.


You can get the same
“living mulch” effect
in framed beds.

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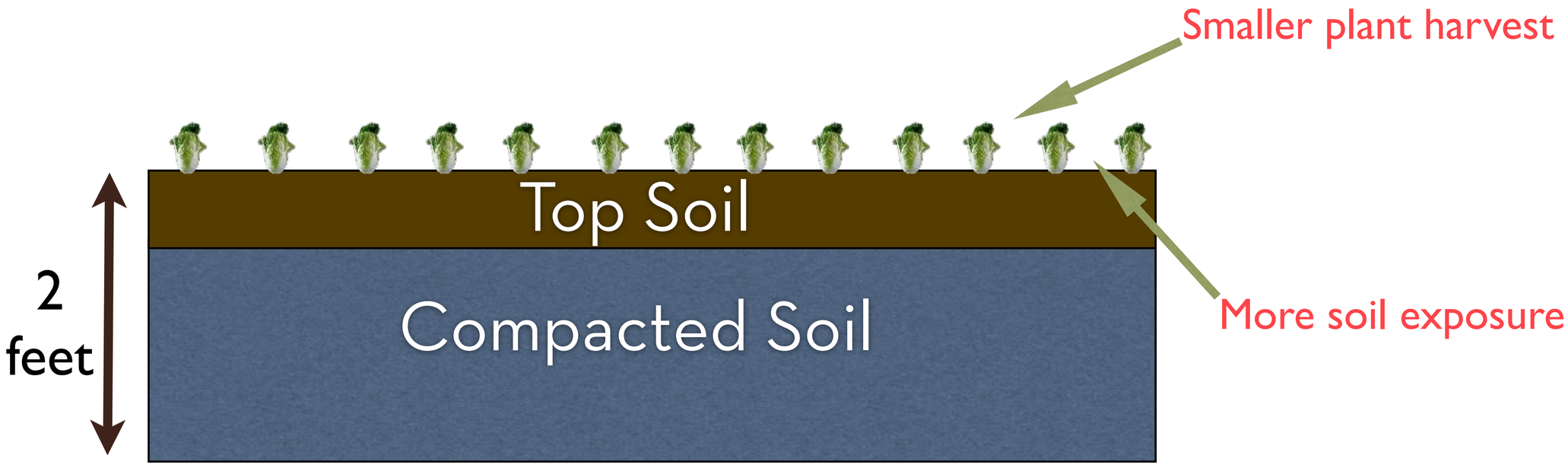
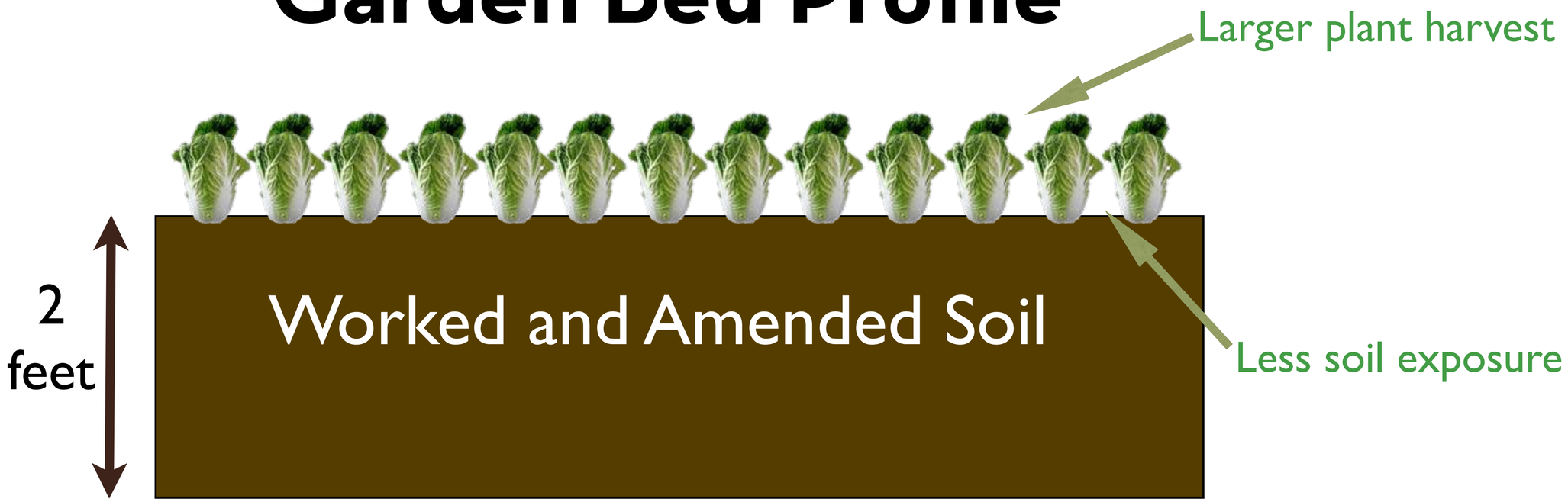
#2: Fix Compacted, Sterile Soil

Garden Bed Profile



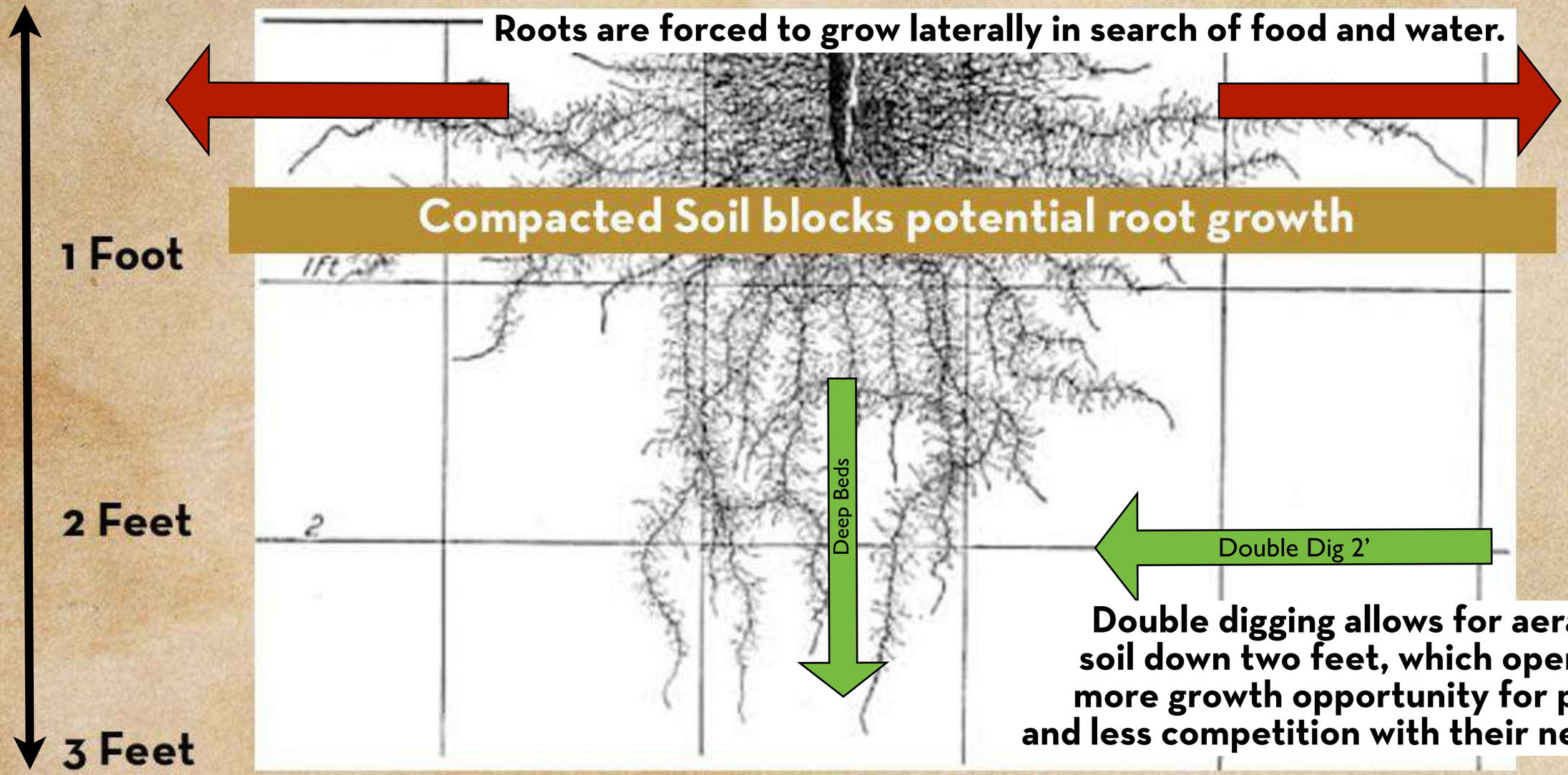
Compacted soil leads to poor plant growth.

Garden Bed Profile



Deeply worked and amended soil lead to vibrant growth.

Plants struggle in compacted, exposed soil.



Cabbage Root Profile

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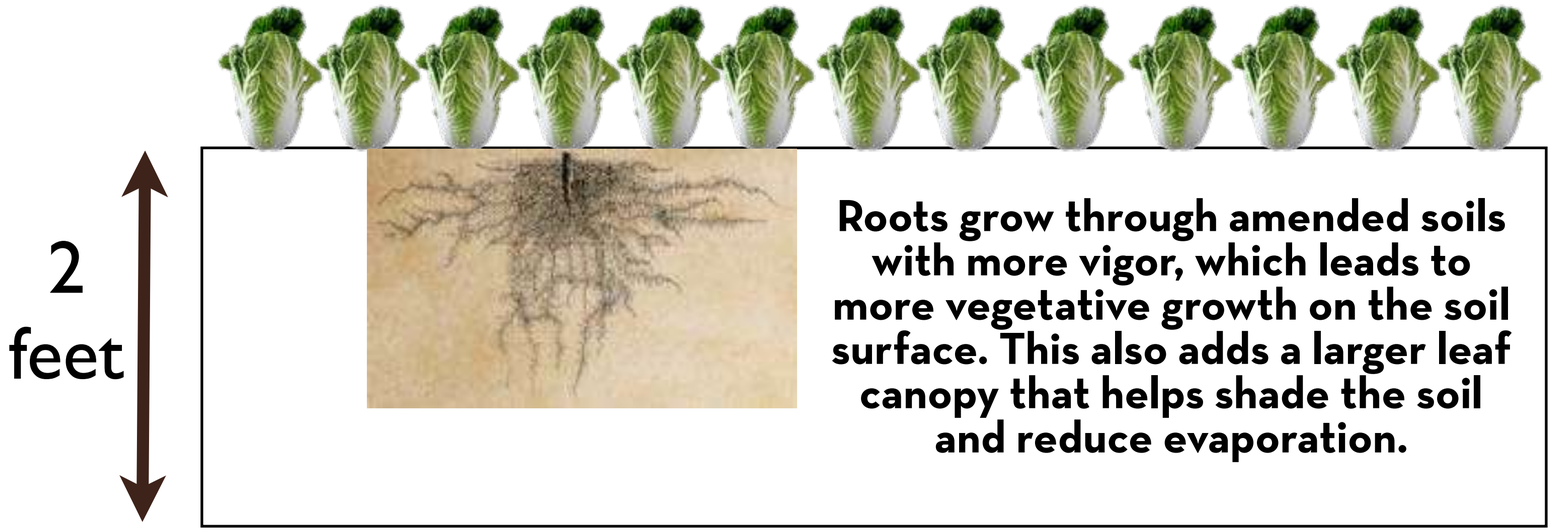
Garden Bed Profile



You don't need to become a soil scientist to bring soil back to life… But if you don't take steps to reinvigorate your soil, the plants will continually struggle.

And plants under stress:
-attract disease and pests
-go to seed early, with listless growth
-allow for more weeds in exposed soil
-require more frequent watering
-make unnecessary work for YOU.

To Fix Dry Compacted Soils: Add Organic Matter & Deeply work the material into the bed with a garden fork (double dig) and Never walk on Beds

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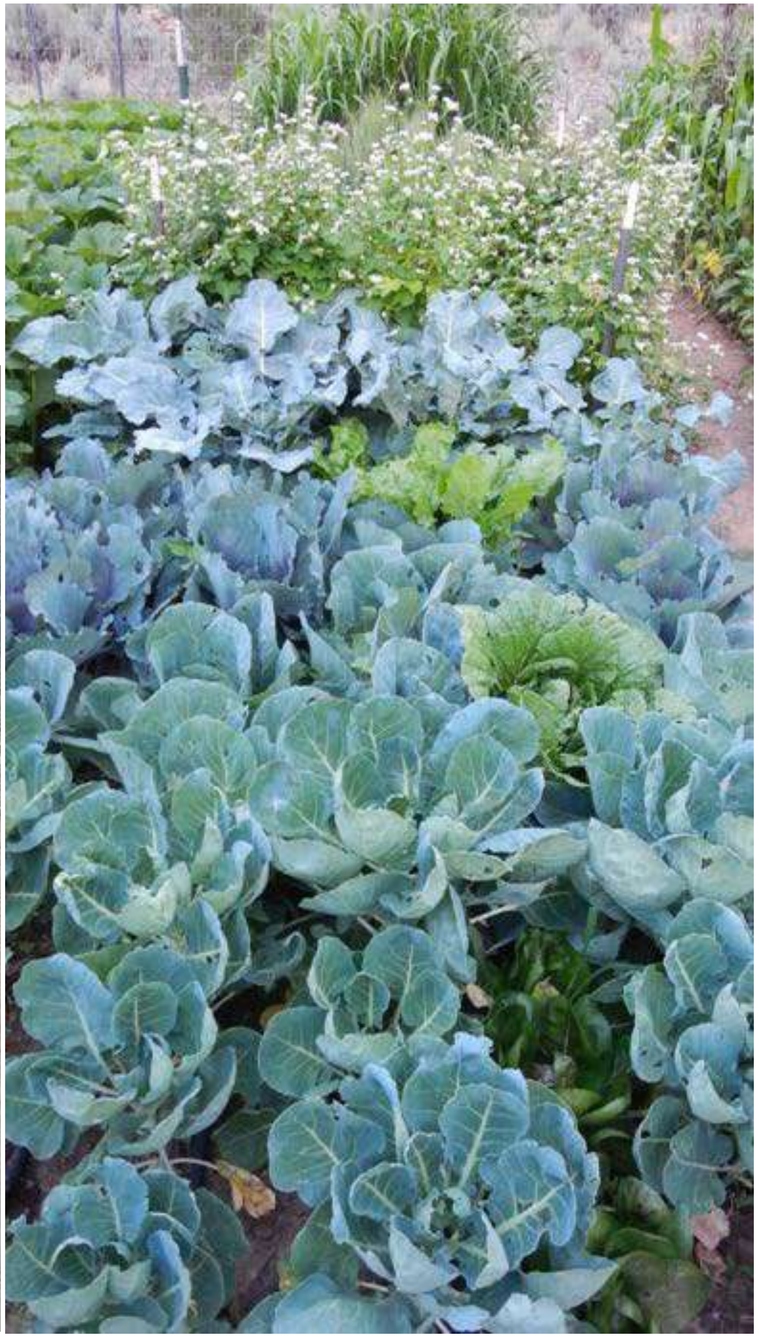
Soil is alive.

(with microorganisms)



Healthy Soil Needs

-Food (organic matter)
-Trace Minerals(rock flour)
-Oxygen (aeration)
-Water
-Cover (mulch)
-Microorganisms

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Building the Soil Food Web

1 Billion Bacteria

Ten Thousand Species

In a teaspoon of healthy garden soil, there can be a billion bacteria. And within that population, there can be over ten thousand different species of bacteria—in the same teaspoon, along with tens of thousands of other micro-organisms like fungi, mycorrhizae, protozoa, nematodes and micro-arthropods.

These are your partners in the garden.

Treat them well.

They run the show.

Building the Soil Food Web (continued)

Your **main job** is to increase and sustain the diversity of microorganisms in your soil.

You do this by:

-Adding organic matter to the soil
-Composting
-Worm castings
-Mulching

Start planning your compost bins today!

Diversity leads to resilience, higher yields, and less work!

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#3: Start a Compost Bin and Worm Bin

Healthy soil relies on relationships with micro organisms.
So to get them into your soil, you need to feed them first.
The best way to do this is by using an aerobic compost pile.
Worm bins work incredibly well too, even in the winter.

You may not have access to a compost pile at first, so you can get by with purchasing quality Organic compost. But just remember that a main priority for you should be to start setting aside some space for your composting efforts. You may think at first that you don't really need one, but it will inevitably become the most valuable thing you do for your garden.

Buying Compost (until you can make your own)

Commercially available compost is an unregulated product. Read the labels.

Here are some of the things to look for:

-Buy organic compost in bulk for quantity discount
-On bags, look for “OMRI” seal for organic ingredients

Appearance:
The compost you are buying in bulk
or bags shouldn’t look like its source materials.
If it looks like wood chips, it probably is wood chips.
Good compost will be dark in color and crumbly
like chocolate cake.

Aroma:
It should smell “earthy” but not distasteful.
Like a forest soil in spring, not a barnyard in July.

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Compost Ingredients:

Good compost is made up of a number of organic source materials.
The more diversity, the better the diversity of soil microbes,
which makes for stronger compost.

Questionable Ingredients

Sludge: a byproduct of municipal sewage plants. I would steer away from the bilge.

Pesticides: Some compost that is derived from grass clippings, straw, and hay can have herbicide residue that can be very persistent and can negatively affect plant growth in your garden.

Priority One is to **START MAKING YOUR OWN COMPOST** as you get into gardening.

Raised Bed Styles : Overview

In-the-ground raised beds: need “double digging”
-No need for any wood or structure.
-Works in perpetuity, no frame replacement, etc.

Framed raised beds
-More expense and setup at first.
Need to use materials that have
no chemicals and won’t break down
too easily in the weather: cedar planks,
bricks, rocks, logs, etc.
-Structure needs to be replaced
eventually, if weathered.
-Allows for higher bed height
(less bending over).
-4 x 8 feet good for starters.
-At least 12 inches deep; 24 is better.

Acquiring Soil for new Raised Beds

If you can't use your own soil, because it's too shallow or concrete hardpan or it is too far gone for whatever reason, and you have nothing else to start with...

Buy topsoil by the truckload (cheaper)
Buy organic compost in bulk or shovel a truckload yourself from a friend's land.
Mix at 80/20% (soil to compost) for new beds.

2 Options for beds:

Framed Raised Bed
Make a frame above ground with wood, brick or other materials, then fill with soil mix.

In-Ground Raised Bed
Clear out or amend the soil that's in place in the shape of the bed, double dig & add new material to make an in-ground raised bed.

Amending soil to start a garden

If you're starting from scratch, you will need to amend the soil with copious amounts of organic compost to start. Apply at the rate of 5-10 cubic feet per 100 sq. ft. of garden bed. That's about 6-8 five-gallon buckets of compost for a 100 sq. ft. bed. It will amount to about a 2" layer of compost on the bed to be worked into the top 6" of soil.

It's also a good idea to amend the original soil with greensand and rock flour (also called "rock phosphate"). They will both help add phosphorus, potassium and trace minerals to the soil for the long term. Apply at 10 pounds per 100 sq. ft. of bed.

Add this after the compost and work into top 6" of soil.

Framed Raised Beds: The basics for starting out

Mark bed outline with flour.
4’ x 8’ is a good bed size for building frame.
Use 2”x 10” or 2” x 12” boards (two layers).
Short boards are 4’ long. Other side is 8’ long.
Don’t use treated lumber.
Screw the frame together on concrete first.
Set corner 4” x 4” posts into soil 4” deeper than frame.
Set frame and loosen native soil underneath with fork.

Amend lower foot with compost and rock flour.
Bring in new bed soil with 20% compost mixed in.
Fill first layer of frame with new soil and compost.

Add second layer of frame.
Add soil compost mix to top of second frame layer.
Amend top 6” with mature compost and rock flour.
Plant the “Super Seven” Food plants in these two beds for Nutrient-Dense deep greens!
(Chard, Collards, Beets, Spinach, Arugula, Kale, & Mustard Greens)

Easy Bed Design for larger areas

These are in-the-ground raised beds with double-dug soil amended with compost. This is the easiest no-frame option.

-4-5 feet wide by 8-20 feet long, depending on size of space, and your reach, halfway across.

-Rows should be laid out with long side running north to south. (true for all beds)

-Keep paths to 1 foot wide between beds

Double Digging: The basics

Keep your back straight while digging. Bend at the knees to use legs for lifting.

Dig and remove soil from one-foot trench cut to full width of bed.

Put soil from first trench aside to fill last trench later. Successive soil from top of trenches will fill top of previous trench.

Use garden fork to loosen soil at second foot of depth.

Add compost to this lower foot and amend with fork.

Replace top foot of soil and amend with compost.

Repeat process, moving backward down bed until entire bed has been worked to two-foot depth.

Add any soil amendments and rock flour to finished bed. Work amendments into top 6 inches of soil with twist fork.

Rototillers should only be used as a last resort. They create problems in the soil profile, and throttle the microorganisms in the Soil Food Web more than necessary.

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#4: Automate Your Watering

Irregular watering can cause a host of problems for garden plants:

Heat stress
Nutrient deficiencies
Waterborne diseases
Irregular growth
Stunting
Early bolting
Pests

Humans Forget to Water

↓

Plants Suffer

Don't be a "hose-dragger" all summer. Hand watering early seedlings is fine, but once they sprout and break through the soil, set your drip irrigation. I'll show you how to automate it next.

Drip Irrigation setup

Drip irrigation is one of the best ways to help yourself save time and water while delivering enough water to your garden throughout the growing season at the best times for the plants. Drip irrigation systems slowly release water into the soil around plants where they get most of their water, and avoid exposure to evaporation unlike overhead sprinklers. Using drip irrigation can also lessen diseases that can become a problem with overly wet conditions on plants.

The physical parts of the drip system:
- **Main Supply line**: 3/4" or 1" diameter

- **The secondary lines** (drip irrigation tubing)
 Choices:
  -1/4 inch tubing
  -1/2 inch tubing
  -T-tape
-**Elbows and accessories**

The drip irrigation, on a $30 timer is what allows me to leave for weeks at a time during the growing season. **It ROCKS !**

At the hose spigot

-Pressure Regulator
This will take your house water pressure, which is usually around 60psi (pounds per square inch), and drop it to 20psi so that the higher pressure won't blow out your delicate emitters.

-Timer
This battery-operated valve will turn water on and off on a schedule you choose. The cheaper ones are around $35 and well worth it.

-Screen filter
This will filter out any sediment that could clog your emitter openings.

-Female hose start, or coupler to attach to hose.

(Repeat this lineup for each zone you create.)

Purchase drip system parts here:
http://www.dripworks.com

You can find similar systems at "big box" hardware stores.

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#5: Dial in the right planting schedule for your area.

Sowing seeds or transplanting seedlings at the wrong time can set you up for failure.

Plants need good timing.

This mistake happens because frost dates are unknown or ignored.

Do you have your local planting calendar yet?
The first thing you will need are your "**frost dates**."

Every gardener needs to know their local climate information.
Step one is to find your seasonal frost dates
(Last spring freeze and first fall freeze)

How to find your frost dates

Click the button below to get to the web page to find your frost dates, or simply copy and paste the url below the button into your web browser.

Find Your Frost Dates

http://growfoodwell.com/**get-started-now2**

This will bring up a list of frost dates broken down by town in your state.

Find the town closest to you and look at the frost dates.
See next page for screen shot...

50% chance it will hit 32 degrees this date in Spring

50% chance it will hit 32 degrees this date in Fall

Freeze / Frost Occurrence Data

All probabilities in whole percent. See notes for probability level description.

- Indicates the probability of occurrence of threshold temperature is less than indicated probability.

State And Station Name	Threshold (F)	Spring (Date)			Fall (Date)			Freeze Free Period (Days)			Probability Level (4)
		Probability Level (1)			Probability Level (2)			Probability Level (3)			
Colorado		90	50	10	10	50	90	10	50	90	
AKRON 4 E	36	May01	May20	Jun07	Sep09	Sep21	Oct02	144	123	102	54
	32	Apr29	May11	May23	Sep15	Sep27	Oct08	157	138	120	47
	28	Apr19	May01	May13	Sep23	Oct08	Oct24	182	160	138	38
ALAMOSA BERGMAN FIELD	36	Jun11	Jun28	Jul14	Aug13	Aug31	Sep17	85	63	41	69
	32	May26	Jun09	Jun23	Sep01	Sep14	Sep28	114	97	80	62
	28	May12	May28	Jun14	Sep10	Sep21	Oct02	130	115	101	56
ALTENBERN	36	May25	Jun18	Jul12	Aug23	Sep11	Sep30	119	84	48	61
	32	May08	May30	Jun20	Sep10	Sep23	Oct06	144	116	88	53
	28	Apr25	May13	May30	Sep13	Oct01	Oct19	166	140	115	43
ANTERO RESERVOIR	36	Jul12	Jul24	Aug04	Jul29	Aug08	Aug19	32	15	0	83
	32	Jun20	Jul07	Jul23	Aug05	Aug22	Sep09	74	46	18	73
	28	Jun01	Jun16	Jul02	Aug23	Sep08	Sep24	104	83	62	64
BAILEY	36	Jun22	Jul06	Jul21	Aug01	Aug21	Sep09	69	45	20	75
	32	Jun05	Jun24	Jul13	Aug20	Sep06	Sep23	99	73	47	66
	28	May15	May31	Jun16	Aug30	Sep15	Sep30	127	106	84	57

Your Town →

Total Growing Season Length: 116 days


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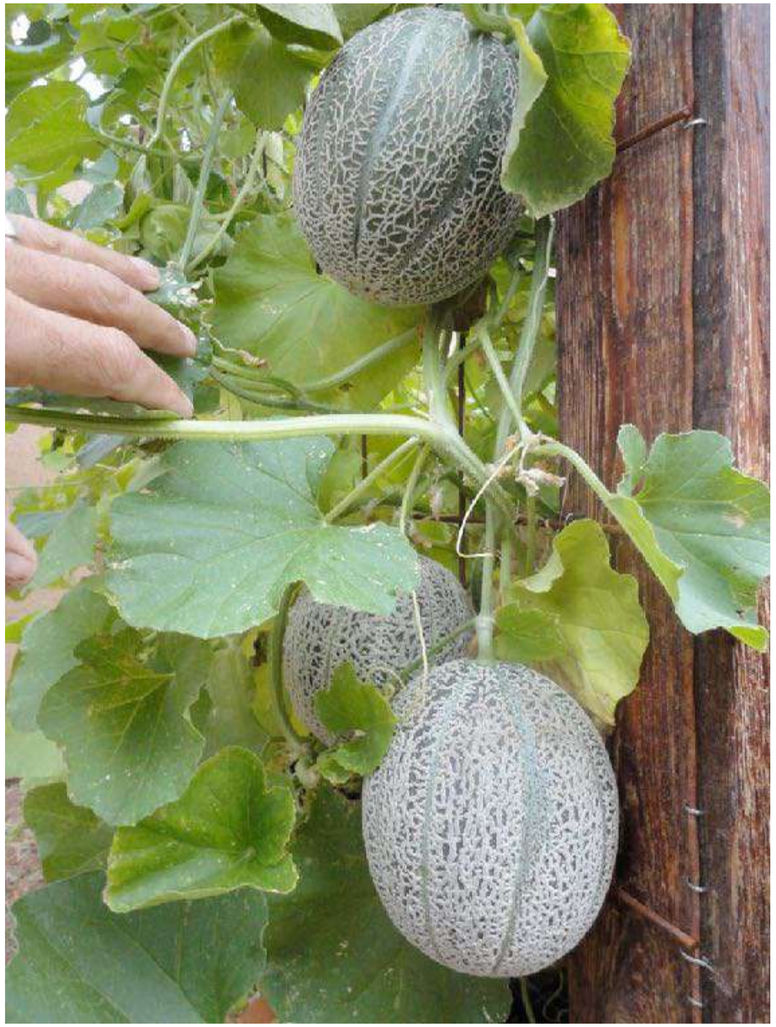
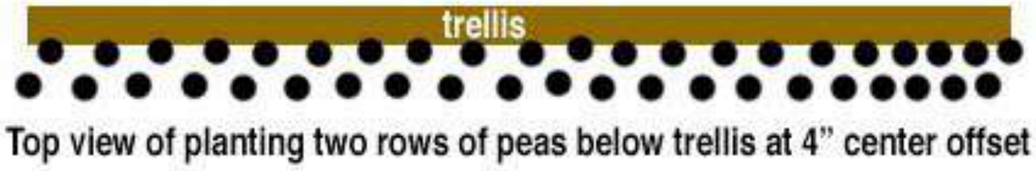
Bonus Steps to Improve the garden
(if the first 5 weren't enough)

Go vertical with a trellis!

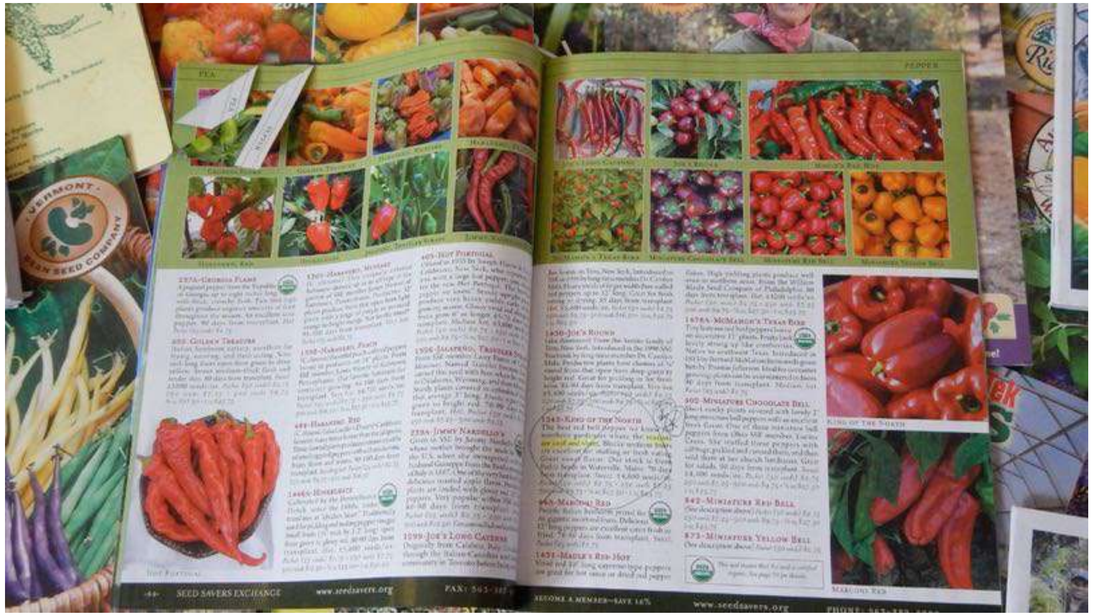
Think about where you can install a vertical trellis in your garden. Usually the north side of a bed is a good place, or along an unused wall space. You don't need much area on the soil. Just a space the width of the trellis and about a foot in the other direction will work fine. Plant any climbing veggie there and save space in the main garden for less sprawling plants. Good starters: Peas, Pole beans, Squash, Cukes, melons, and vining cherry tomato plants.





Top view of planting two rows of peas below trellis at 4" center offset

Buying seeds from Catalogs



*Always buy GOOD SEED.
Here are the main four I use:

http://www.seedsofchange.com
Rancho Dominguez, CA

http://www.territorial-seed.com/
Cottage Grove, OR

http://www.johnnyseeds.com/
Waterville, Maine

http://www.groworganic.com
(Peaceful Valley Farm Supply) Grass Valley, CA

Open-pollinated vs. Hybrid seeds

Try to use open-pollinated seeds if you can.
The seeds from these plants can be saved and used year after year, as opposed to “Hybrids” which cannot.

However, it’s okay to have some hybrid and some open-pollinated is fine in organic gardens. (This is different than “GMO” seed, which should be avoided.)

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-Deep, aerated beds

-Soil amended with organic compost

-Intensive block-style plant spacing

-Correct Planting Times

If you combine all four of the above, you will increase your yields from **50-100%.**

Adding drip-fed irrigation on a timer will cut your workload in half by greatly reducing hand-watering and weed growth.

Resilience

When vegetable plants get consistent, baseline access to water and living soil, they can avoid stress and grow to their full potential with more strength to ward off pest attacks.

And resilience leads to better harvests!

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Learn more about growing a resilient food garden!

Click here to learn about our streaming garden videos now!

We're still accepting members for 2021!

Topics We Cover

- Mulching
- Companion planting
- Compost piles
- Composting with worms
- Compost tea
- Worm bins

- Planting structures and strategies
- Season extension
- Cold frames
- Hoop houses
- Vertical gardening
- Succession planting
- Crop rotation
- Food preservation
- Solar driers