UC Master Gardeners Of Napa County

Welcome!

Sustainable Vegetable Gardening, part 1

February 23, 2020

UC Master Gardeners of Napa County

University of California
Agriculture and Natural Resources
UCCE Master Gardener Program

UC Master Gardeners Of Napa County

Housekeeping Details

Introduction of Master Gardeners

Did you sign in and verify your email address?

Location of restrooms down the hall

Small Group Discussion:

Why did you sign up for this class?
What do you hope to learn?

Sustainable Vegetable Gardening

Class 1 – Climate, Temp, Sun, Soil

Class 2 – Seeds & Seedlings, Garden Planning

Class 3 – Water, Weeds, Cool Season Vegetables, IPM

Class 4 – Warm Season Vegetables, IPM, Summary

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Classifying Vegetables: Perennial vs Annual

Classifying Vegetables: Cool vs Warm Season

- Warm season crops grow best 65-95 degrees and are injured or killed by frost.

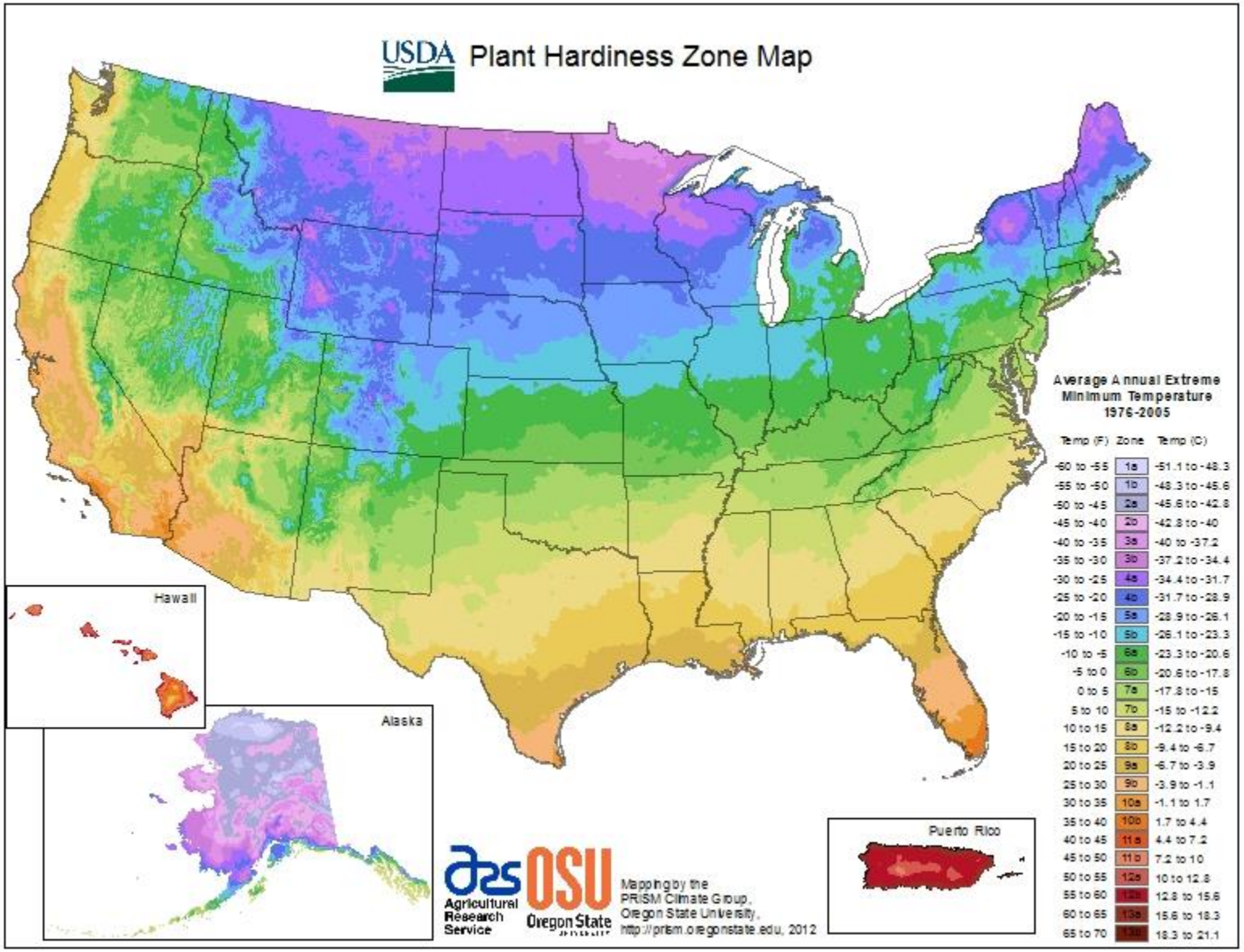
- Cool season crops grow best 55 to 75 degrees and tolerate some (or a lot) of frost.

GLOBAL MEDITERRANEAN CLIMATES

California is one of the few places on Earth with a Mediterranean climate perfect for growing almonds. The Mediterranean climate is characterized by mild winters with a defined rainy season and hot, dry summers, all of which are important for almond orchards.

SOURCE: Kottek, M., et al. World Map of Köppen-Geiger Climate Classification. Updated 2006. Meteorol. Z., 15, 259-263.

USDA Plant Hardiness Zone Map



Average Annual Extreme Minimum Temperature 1976-2005

Temp (F)	Zone	Temp (C)
-60 to -55	1a	-51.1 to -48.3
-55 to -50	1b	-48.3 to -45.6
-50 to -45	2a	-45.6 to -42.8
-45 to -40	2b	-42.8 to -40
-40 to -35	3a	-40 to -37.2
-35 to -30	3b	-37.2 to -34.4
-30 to -25	4a	-34.4 to -31.7
-25 to -20	4b	-31.7 to -28.9
-20 to -15	5a	-28.9 to -26.1
-15 to -10	5b	-26.1 to -23.3
-10 to -5	6a	-23.3 to -20.6
-5 to 0	6b	-20.6 to -17.8
0 to 5	7a	-17.8 to -15
5 to 10	7b	-15 to -12.2
10 to 15	8a	-12.2 to -9.4
15 to 20	8b	-9.4 to -6.7
20 to 25	9a	-6.7 to -3.9
25 to 30	9b	-3.9 to -1.1
30 to 35	10a	-1.1 to 1.7
35 to 40	10b	1.7 to 4.4
40 to 45	11a	4.4 to 7.2
45 to 50	11b	7.2 to 10
50 to 55	12a	10 to 12.8
55 to 60	12b	12.8 to 15.6
60 to 65	13a	15.6 to 18.3
65 to 70	13b	18.3 to 21.1

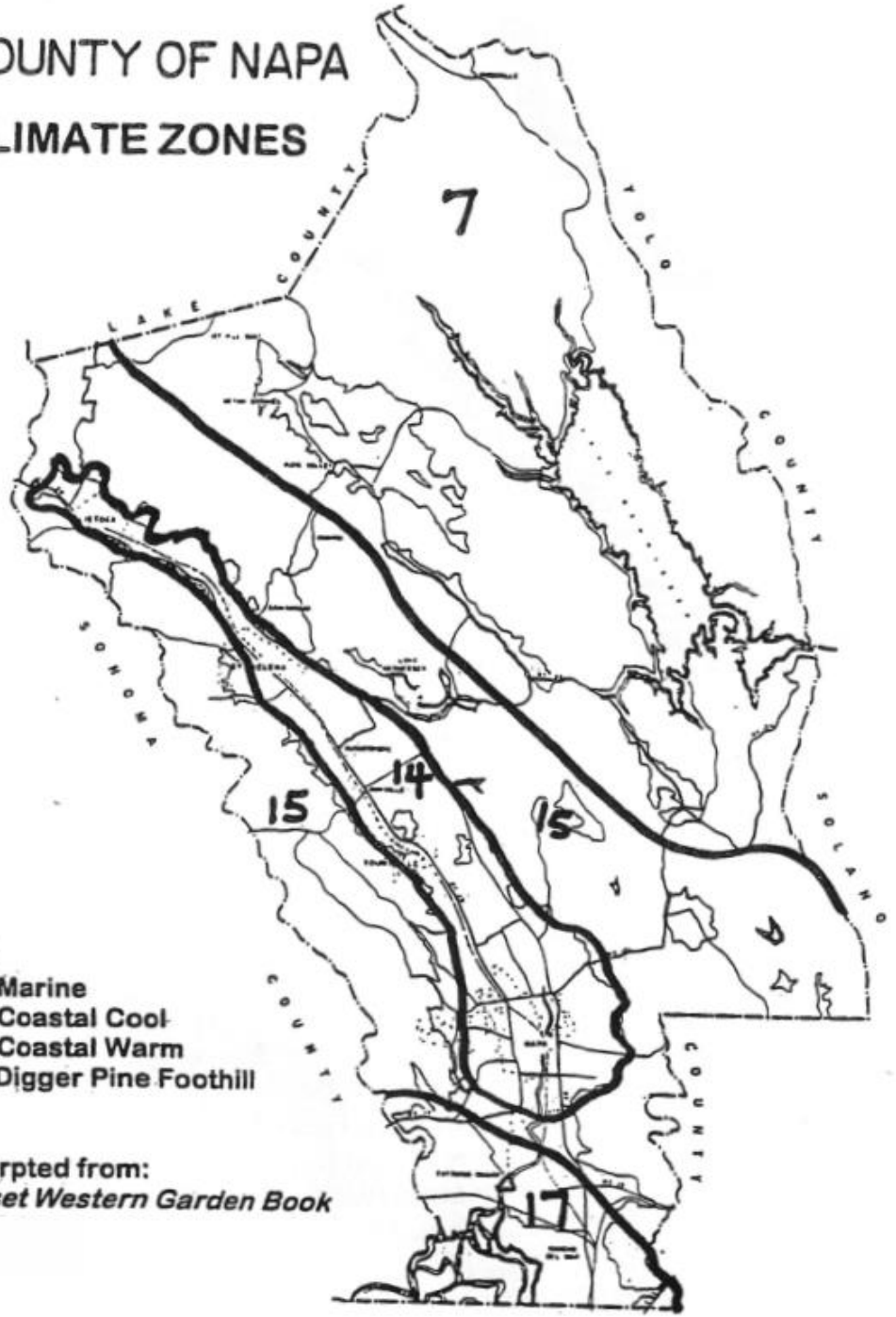
Agricultural Research Service

Oregon State University

Mapping by the PRISM Climate Group, Oregon State University, http://prism.oregonstate.edu, 2012

COUNTY OF NAPA

CLIMATE ZONES



KEY:
17 = Marine
15 = Coastal Cool
14 = Coastal Warm
7 = Digger Pine Foothill

Excerpted from:
Sunset Western Garden Book

14
15
14
7
8
9
Lake Berryessa
15
15
14
14
Santa Rosa
Sebastopol
Rohnert Park
Cotati
17
17
15
15
14
Napa
15
Sonoma
14
Petaluma
14
15
Pacific Ocean
17
17
17
Vallejo
15
Cordelia
17
Pt. Reyes
16
15
16
15
San Rafael
Richmond
17
14
15
15
14
Martinez
Benicia
Crockett
Pinole
17
Berkeley
16
Lafayette

Annual Weather Averages Near Napa

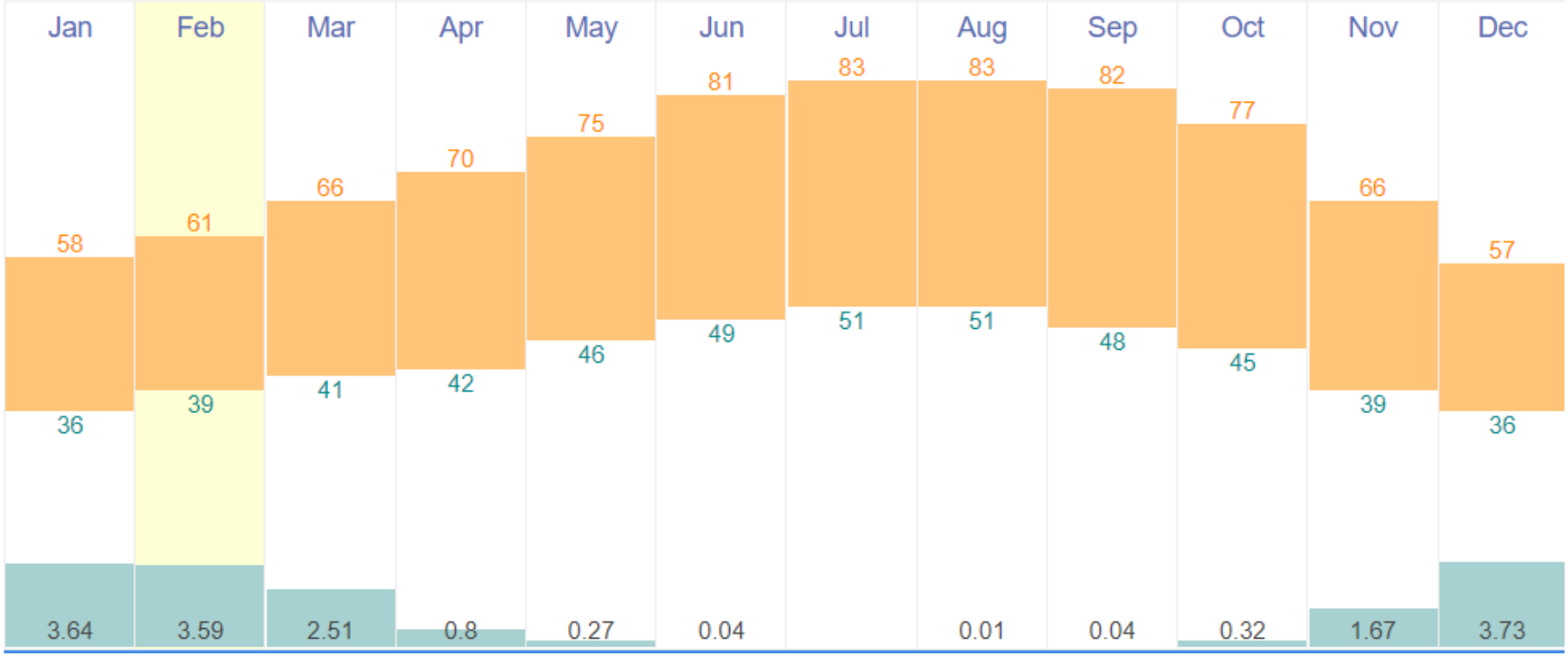
Averages are for Napa County Airport, which is 6 miles from Napa.

Based on weather reports collected during 1985–2015.

Annual Weather Averages Near Calistoga

Averages are for Santa Rosa Sonoma County Airport, which is 14 miles from Calistoga.

Based on weather reports collected during 1985–2015.



Warm Season Crops

- Grow best 65 to 95 Degrees
- Are injured or killed by frost

Cool Season Crops

- Grow best 55 to 75 Degrees
- Tolerate some amount of short-term freezing (frost tolerant)

Sunlight – How much is enough?

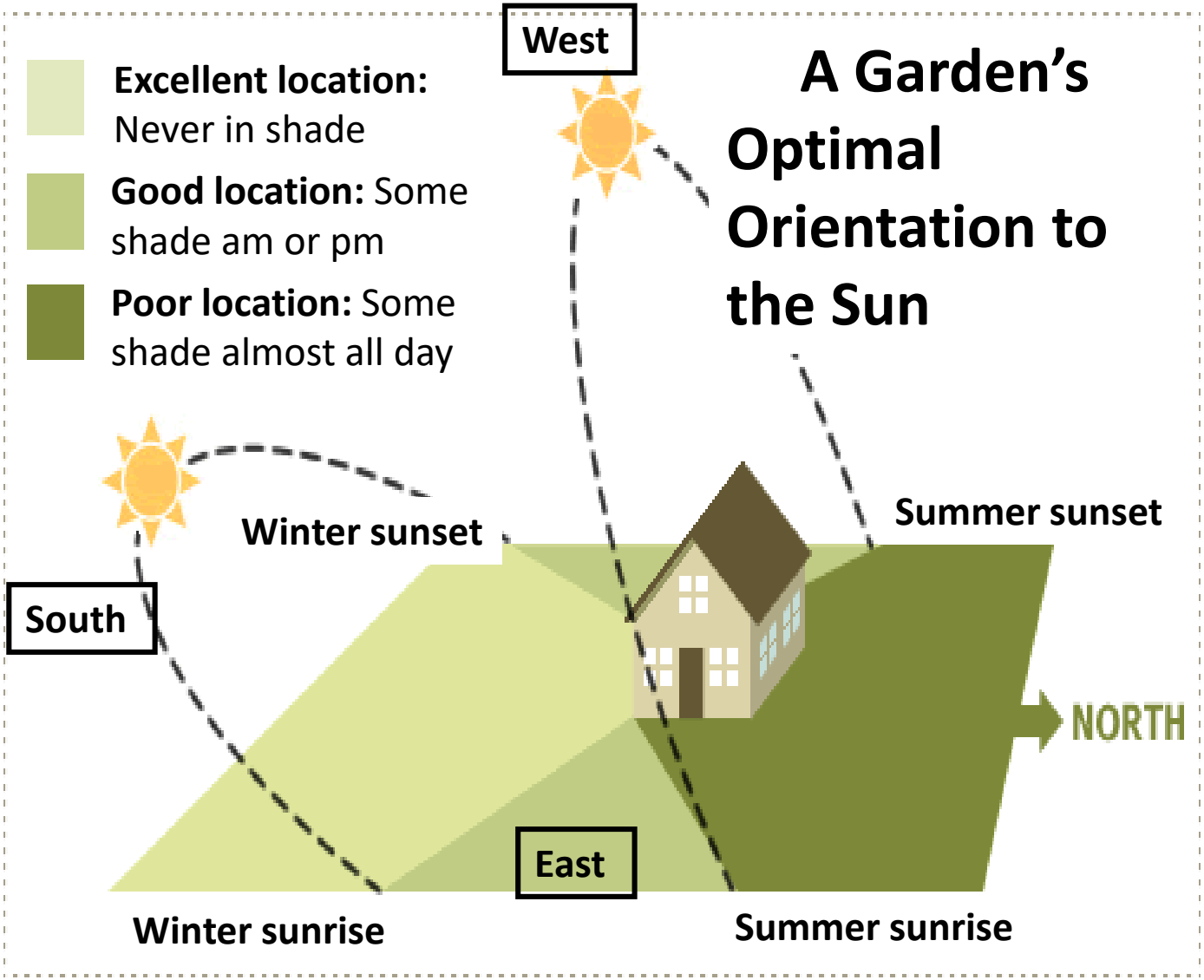
- Eight hours of sunlight is the standard.
- Some leafy or root vegetables will produce a crop with less than eight hours.
- Fruiting crops and warm season crops need the most sunlight.

Hours of daylight through the year

Source: timeanddate.com

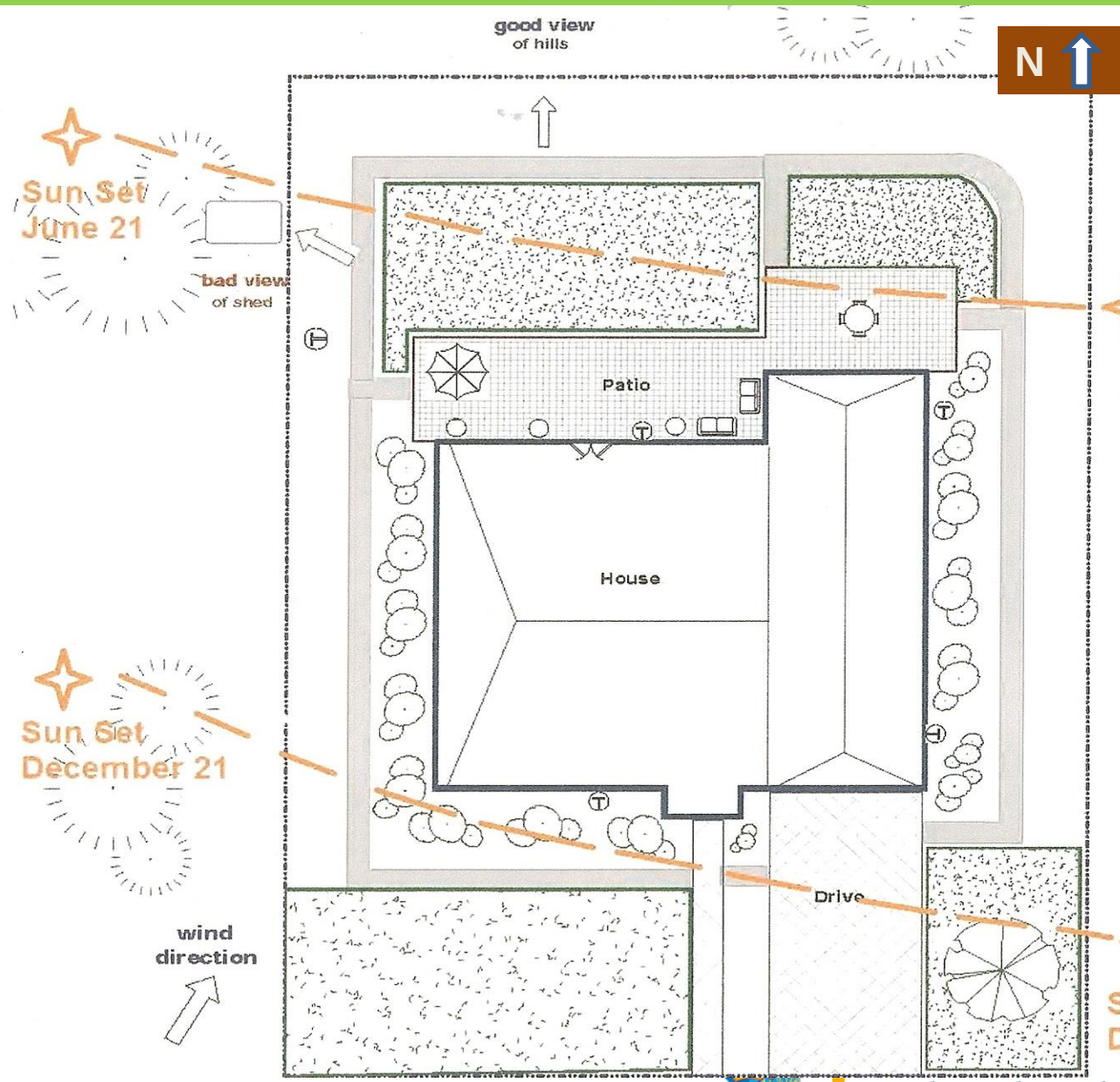
- Spring equinox (3-19-2020) **12 hrs 7 min**
- Summer solstice (6-20-2020): **14 hrs, 50 min**
- Autumn equinox (9-22-2020): **12 hrs 7 min**
- Winter solstice (12-21-2020): **9 hrs 29 min**

Sunlight - Summer vs. Winter



ardener Program

FIND WHERE THE SUN FALLS IN YOUR YARD



NOT ALL AREAS OF YOUR YARD WILL GET THE SAME SUNLIGHT COVERAGE IN THE WINTER AS IN THE SUMMER.

Pat’s vegetable garden area

MICROCLIMATES WITHIN A GARDEN

Grow your Soil

"We don't grow plants. We grow the soil.
The soil grows the plants."

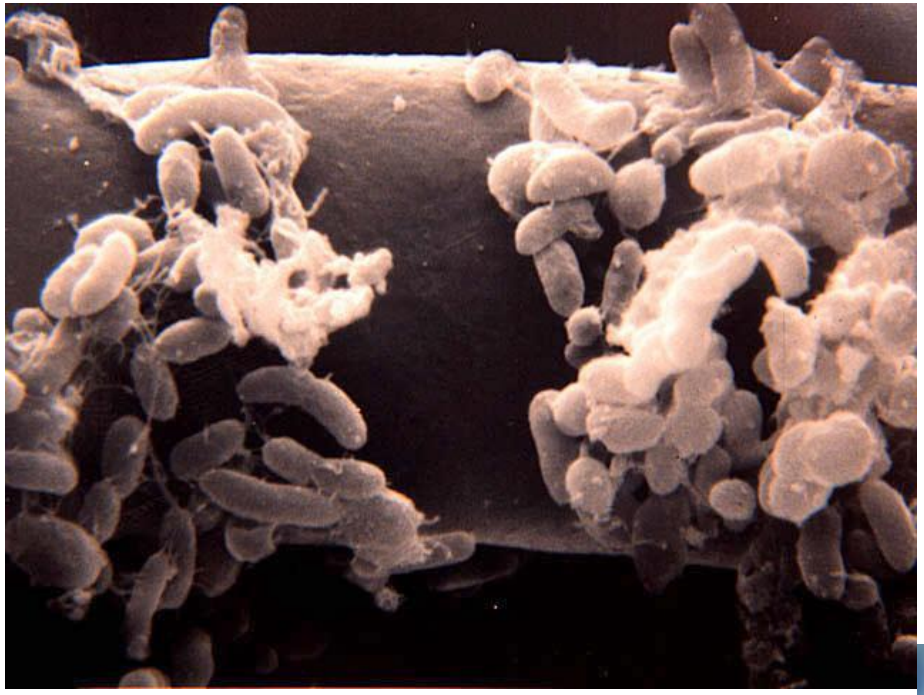
Isis Loran
Creator of the Family Food Garden

Macroscopic soil life

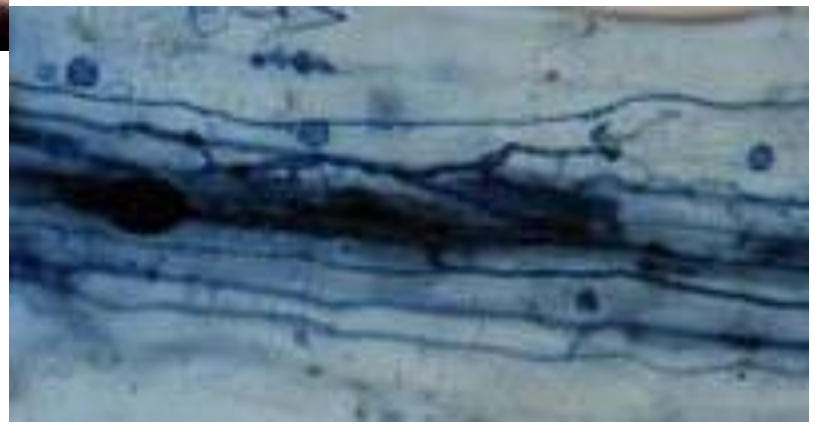
One teaspoon of healthy soil contains:

4-8 billion bacteria
20 million actinomycetes (*thread bacteria*)
1 million fungi
200,000 algae
2,500 linear feet of fungal hyphae

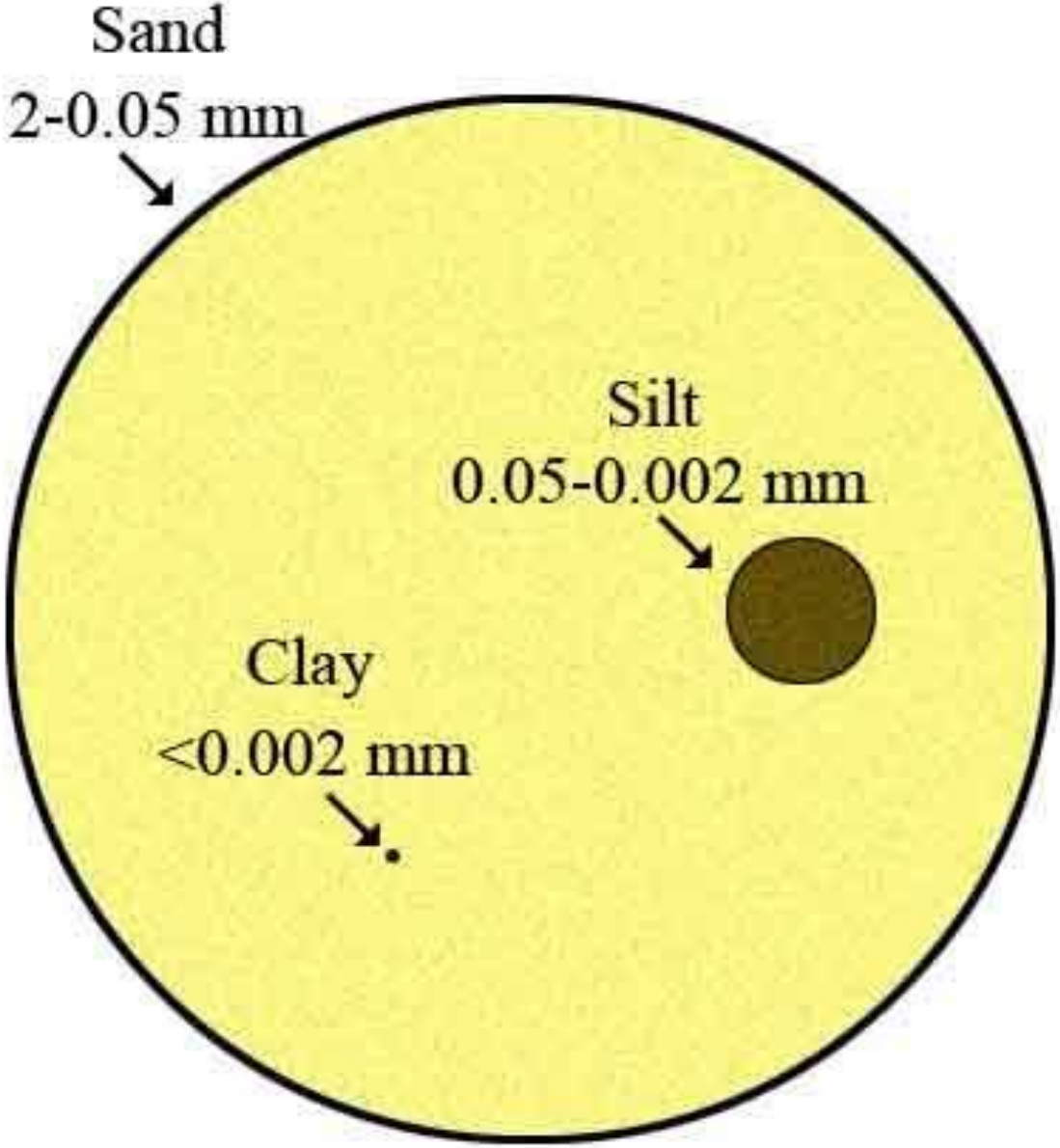
Microscopic soil life

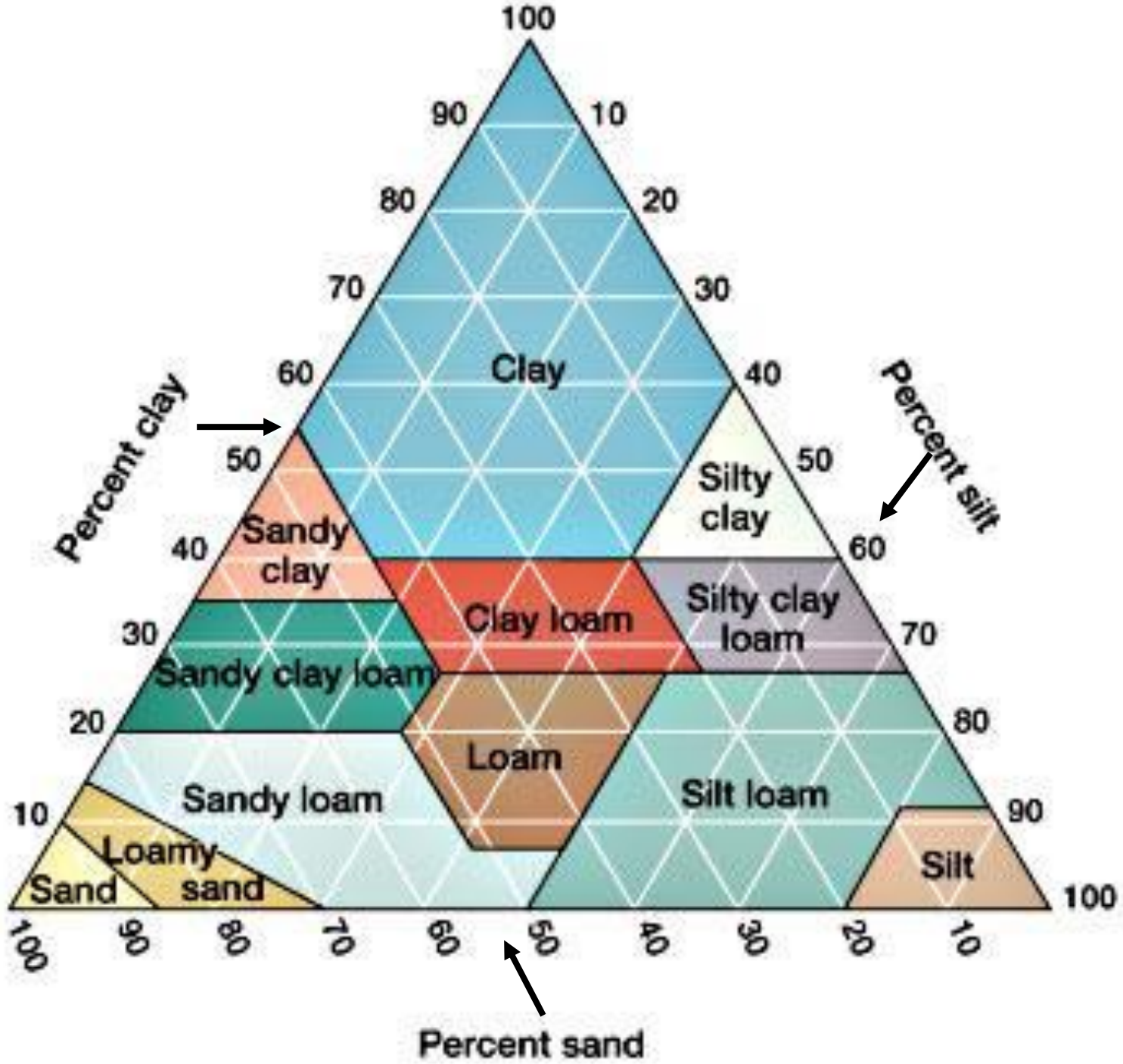


Nitrogen-fixing bacteria on root hair



Mycorrhizae in root


Sand
2-0.05 mm
Silt
0.05-0.002 mm
Clay
<0.002 mm


Percent clay
Percent silt
Percent sand
100
90
80
70
60
50
40
30
20
10
Clay
Silty clay
Sandy clay
Clay loam
Silty clay loam
Sandy clay loam
Loam
Sandy loam
Silt loam
Silt
Loamy sand
Sand

Amending soil

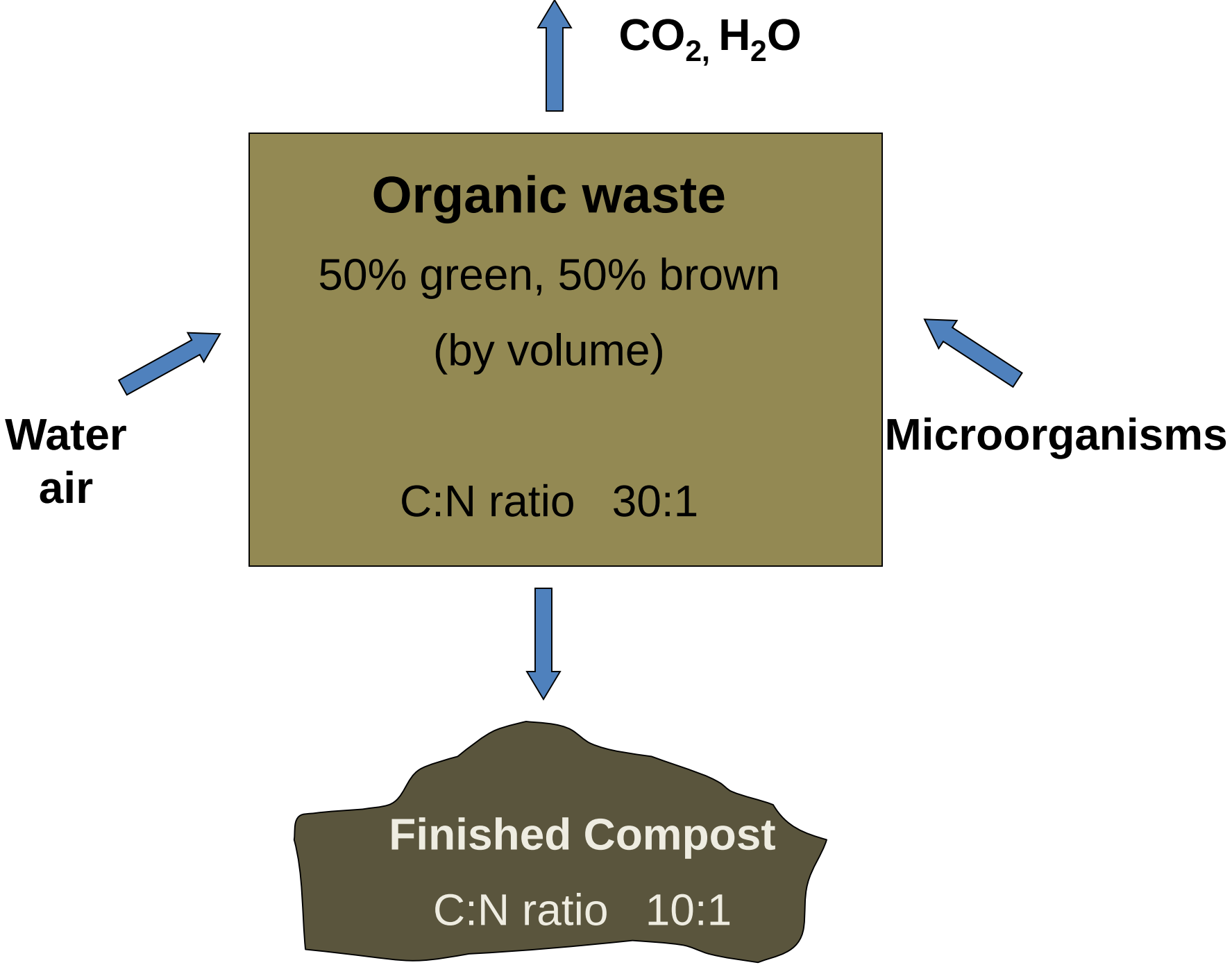
www.your-healthy-gardens.com

Sandy Amended Clay

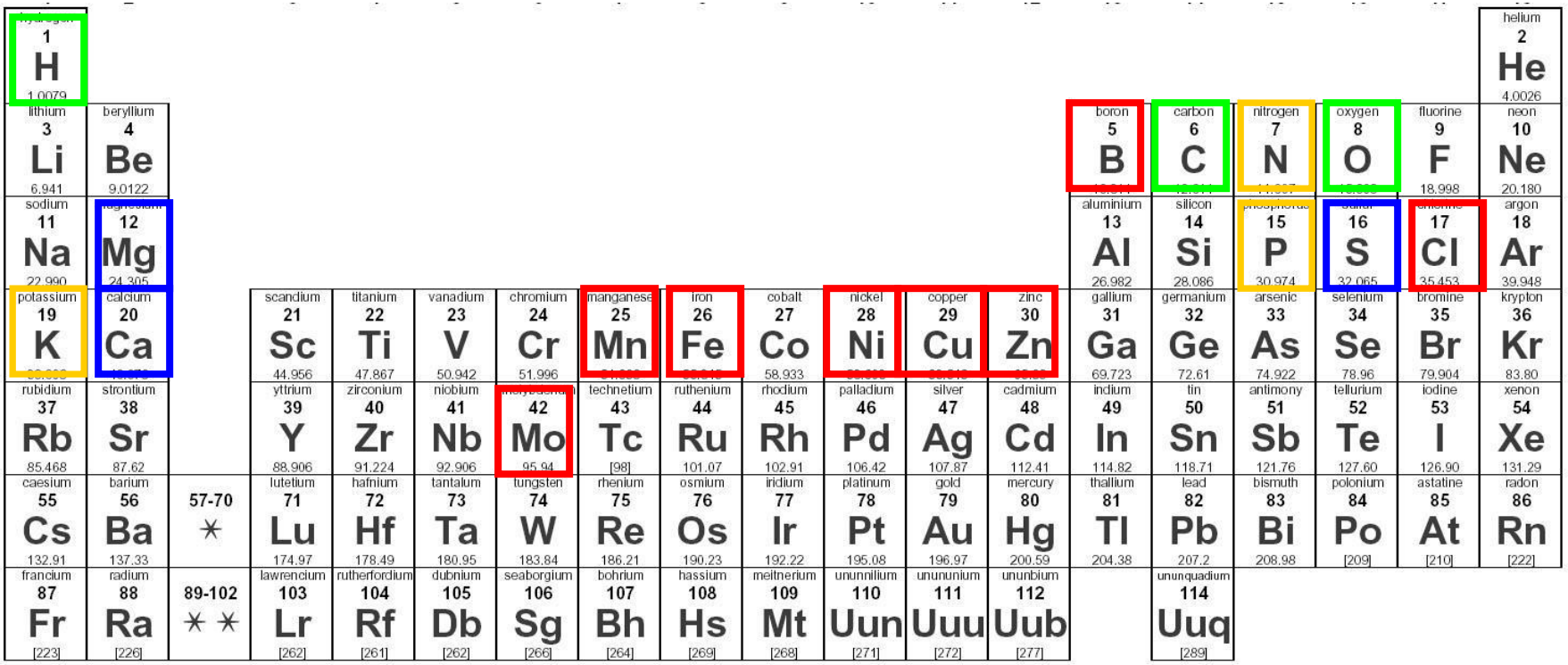
Compost: garden gold

Commercial organic

Home made


CO_2, H_2O
Organic waste
50% green, 50% brown
(by volume)
C:N ratio 30:1
Water
air
Microorganisms
Finished Compost
C:N ratio 10:1

Essential plant nutrients



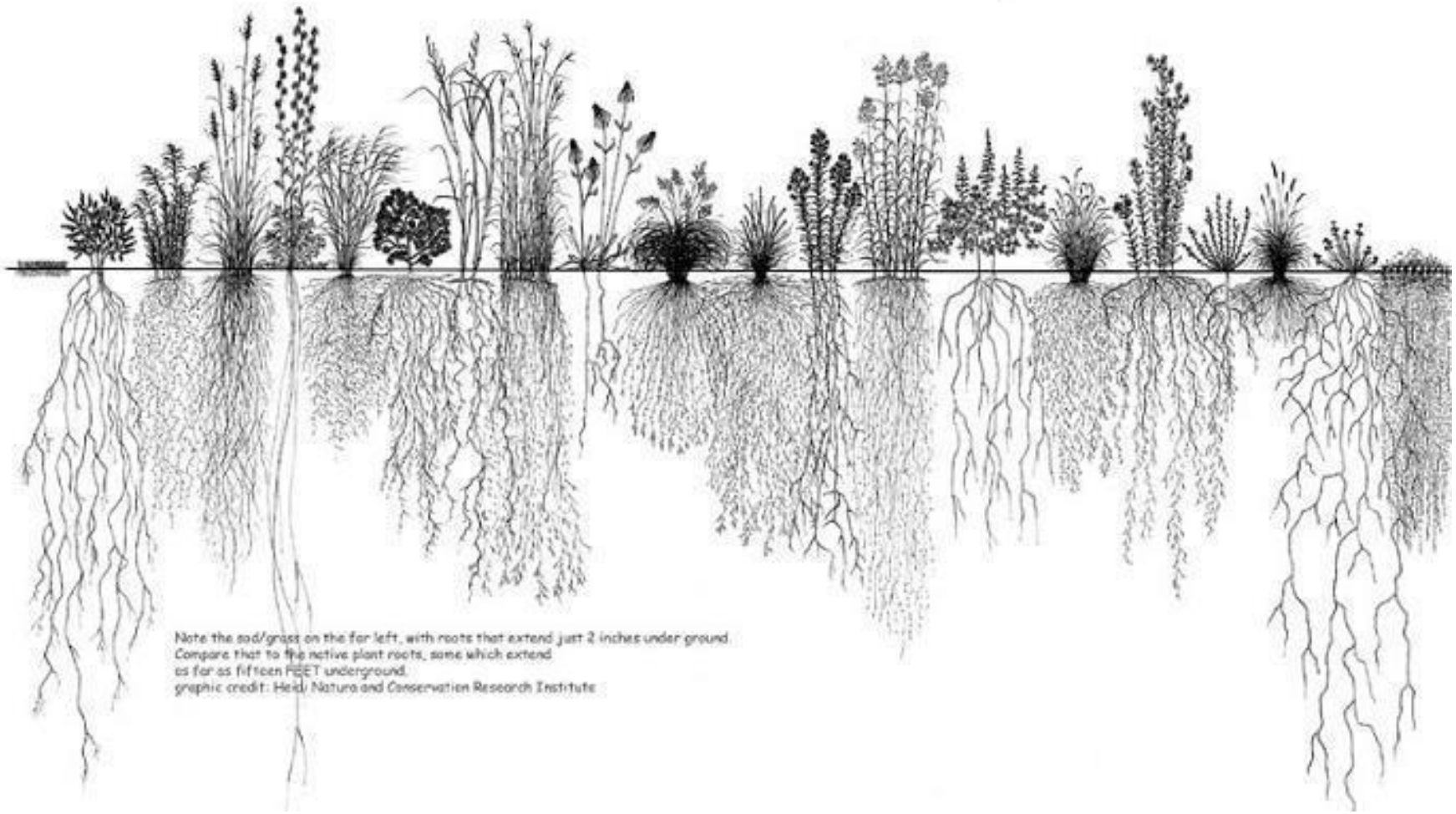
Fertilizers: plant/animal based or synthetic?

photos by Candace Simpson

Cover crops

© UC SAREP

Grasses and grains as cover crops



Green manure: fava beans

Photo by Karen Schaffer

Root nodules

How to dig in your green manure . . .

Sustainable practices: soil

- Vegetables need 8 hrs sun
- “Grow” your soil, don’t replace it.
  - Add organic matter, compost
  - Grow cover crops and green manure.
- Add only the nutrients needed.
- Decide a practice you will implement in your garden

For next week

- Decide what to grow, planning sheet
- Germination test of 10 seeds.
- Bring small box to carry home seedlings