

Dry Farm Site Suitability

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VEGETABLE PROGRAM
STONE LAB

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Why do plants need water?

- Non-woody plant tissues are 70-95% water
- Plants use water during carbon fixation

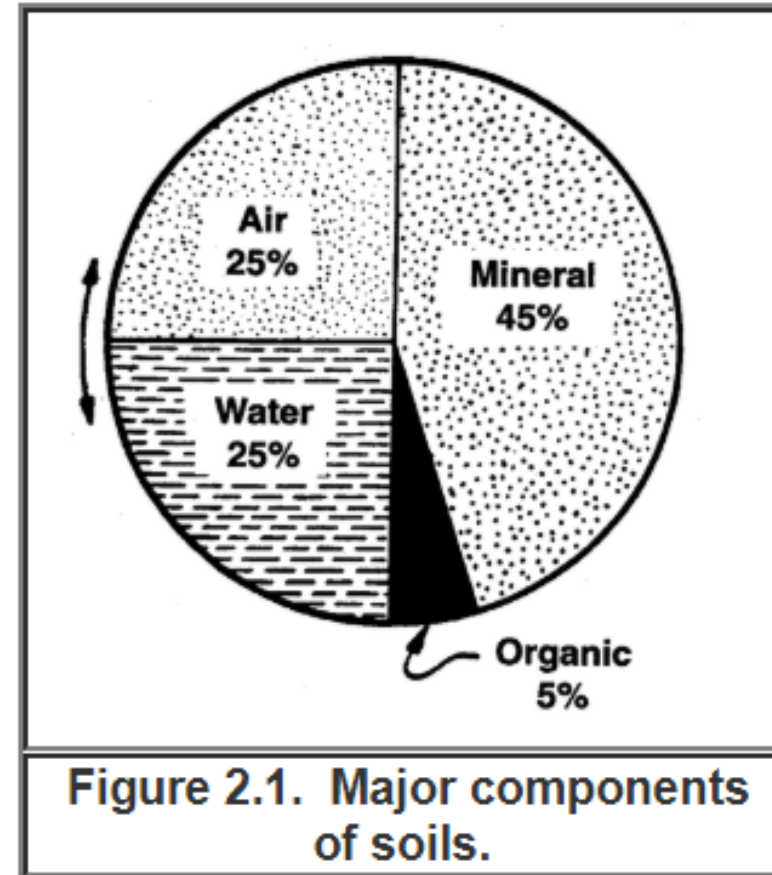
*(6) Carbon Dioxide + (6) Water =>
(6) Oxygen + (1) Carbohydrate*

- >99% of water is lost through transpiration



Soils hold water and nutrients for the plant

- Soil is the major water storage reservoir of terrestrial ecosystems.
- Soil is filled by precipitation and base flow and emptied by evapotranspiration and runoff.
- Water is stored in pores between soil particles.



Available water holding capacity

- Available water holding capacity (AWHC) is the amount of plant available water a soil can hold.
- Soils of different textures have different AWHC
- AWHC is calculated from the depth and texture of the soil's horizons



Water Holding Capacity of different soil textures
Source: NRCS

Soil Texture Classes	WHC (inch/inch)
Coarse sand and gravel	0.02-0.06
Sands	0.05-0.09
Loamy sands	0.08-0.12
Sandy loams	0.11-0.15
Fine sandy loams	0.14-0.18
Loams and very fine sandy loams	0.17-0.22
Silt loams	0.20-0.24
Silty clay loams	0.18-0.23
Sandy clay loams	0.15-0.20
Clay loams	0.14-0.19
Silty clays	0.10-0.14

Horizon (depth)	Texture	AWHC (in)
Ap (0-9")	Silt Loam	1.8
A2 (9-12")	Silt Loam	0.6
E (12-18")	Silty clay loam	1.1
Bt1 (18-26")	Clay	1.0
Bt2 (26-38")	Clay	1.4
BCt (38-44")	Silty clay loam	1.1
C (44-60")	Silt loam	3.2

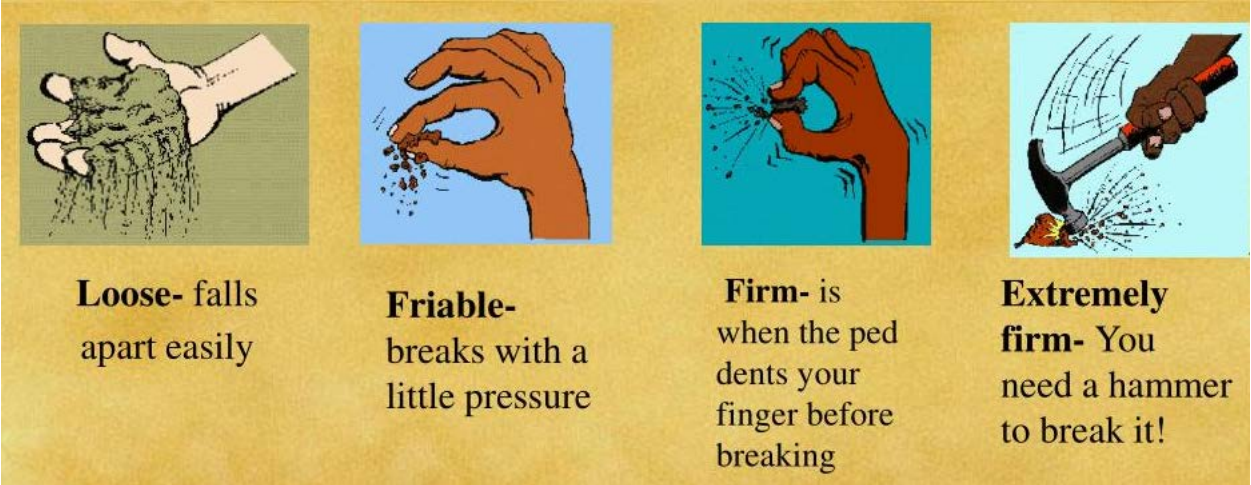


The Willamette Valley has many deep silt loam soils excellent for dry farming

AWHC
10.2"

Firm layers

- Roots grow more slowly (or not at all) in firm soil layers
- Sites with layers of high clay content impede root growth, reducing root access to the entire soil profile's AWHC.



Horizon (depth)	Texture	Moist Consistency
Ap (0-9")	Silt Loam	Very Friable
A2 (9-12")	Silt Loam	Very Friable
E (12-18")	Silty clay loam	Very Friable
Bt1 (18-26")	Clay	Very Firm
Bt2 (26-38")	Clay	Firm
BCt (38-44")	Silty clay loam	Firm
C (44-60")	Silt loam	Friable

AWHC
10.2"
Effective AWHC
3.5"

Web Soil Survey

Blossom End Rot of Tomatoes

