Want to dry farm? First step: assess your site's suitability

What is dry farming?

- Growing crops without irrigation in regions with low or no summer rainfall.

Climate and weather – *why they matter*

- Plants transpire most of the water they take from the soil
- Transpiration is the evaporation of water from plant leaves
- Plants use more water when it is hot and dry (Will. Valley, hot summer) than when it is cool and humid (coast).
- When possible, choose a cooler, more humid site

Soil water – *the only source of crop water*

- In saturated soils water fills all pore spaces. As soil water drains it is held in soil pores and as plants take up water it is held in progressively smaller pores. At the wilting point water remains in soil adsorbed to soil particles, but it is not plant-available.
- Sand and gravelly sands have a high percent of larger pores and low relative surface area = they hold less plant available water.
- Clayey soils have a high percent of small pores and high relative surface area = they hold more "total" water, but as it tightly held in very small pores, much of it is not plant-available.
- Silt loams have the optimal range of pore sizes = they hold the most plant-available water.
- Other things being equal, soils with higher AWHC (9-12 inches) tend to have higher yields than soils with moderate AWHC (5-8). Soils of AWHC less than 5 are typically not appropriate for dry farming.

Depth (in)	In^3/In^3	AWHC/ horizon (In)
9	0.21	1.29
19	0.21	2.1
24	0.20	1.0
35	0.19	2.1
48	0.19	2.1
60	0.20	2.6
Total AWHC in soil profile (to 5 ft depth)		11.8

Woodburn Soil Series

Available water holding capacity (AWHC) by soil texture

Soil texture classes	WHC (inch/inch)
Coarse sand/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, v. fine sndy lms	0.17 – 0.22
Silt loams	0.20 – 0.24
Silty clay loams	0.18 – 0.23
Clay loams	0.14 – 0.19
Silty clays	0.10 – 0.14

Resources

- Information on a site's climate: prism.oregonstate.edu/explorer/
- Information on a site's soil (including WHC): websoilsurvey.sc.egov.usda.gov
- Information on dry farming practices: centerforsmallfarms.oregonstate.edu/dryfarm

Want to dry farm? Second step: improve your site's suitability

Management – *What can I do to improve my site?*

- Map your soils and dry-farm the soils of highest available water holding capacity
- Correct pH and nutrient deficiencies
- Avoid compacting your soil; ameliorate compacted layers
- Kill cover crops early
- Choose crops and varieties appropriate for dry farming
- Plant early
- Space plants widely
- Control weeds completely
- Mulch your soil

Dick Wadsworth of Greenfield Farm (Veneta, OR) is a dry farming expert and pioneer. His tomato rows are planted 9 feet apart with an 18 inch in-row spacing - and weed free!

Management Resources

- Variety trial and other management information. Dryfarmingcollaborative.org
- Dry farm tomato production in coastal California https://casfs.ucsc.edu/about/publications/grower-guides/pdf-downloads/dry-farmed-tomatoes.pdf
- Tomato production: Molino Creek farm, CA, video https://www.youtube.com/watch?v=mcNarcVICmg

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