Intro to Dry Farming Vegetable Crops in the maritime Pacific Northwest

Why dry farming?
Commercial and non-commercial producers in the Pacific Northwest are already facing challenges of increasing weather variability and a changing climate. Reduced snowmelt, higher temperatures and drought directly impact water supply for growers. While dry farming may not be a good fit for every farm, it could offer greater crop security for some in times of uncertain water supply (e.g. water right issues and drought). It may also offer a way to get started in crop production on a piece of land while saving money for an irrigation system. Another reason people may choose to dry farm beyond lack of water might be taste and storage life. One dry farmer reports, “Growing tomatoes for higher yields with irrigation leads to a tremendous crash in quality and watery tomatoes.” In California, some chefs even pay a premium for dry farmed tomatoes. Some varieties of winter squash that typically rot by Thanksgiving, have been shown to store into February or March when dry farmed (http://horticulture.oregonstate.edu/content/winter-squash-production-resources).

What is dry farming?
Dry farming refers to crop production during a dry season (like Willamette Valley summers), utilizing the residual moisture in the soil from the rainy season, and usually occurs in regions that receive 20” or more of annual rainfall. Dry farmers work to conserve soil moisture during long dry periods primarily through a system of careful site selection, soil preparation, planting timing and technique, surface protection, and the use of drought-resistant crop varieties. These strategies could provide an alternative to irrigated crop production in the maritime Pacific Northwest on sites where there is deep soil with good water holding characteristics.

Key practices for dry farming
There is not precise recipe for how to successfully dry farm, and what works on one site may not work on another. Below are some of the key practices and considerations for dry farming in the maritime Pacific Northwest.

Site Selection & Assessment
• Starts with the soil! Key factors are:
  • Know your soil
    ▪ Web Soil Survey – check out your soil types online and look at key characteristics such as texture, depth to restrictive feature, depth to water table
    ▪ Soil auger – pull a 5’ soil core to get a sense for your soil depth and texture, since dry farmed crops root deeper than irrigated crops.
  • Water-holding capacity
    ▪ Clay content – holds more moisture than sandy soil for example.
    ▪ Organic matter - For each 1% increase in soil organic matter, soil water storage can increase by 16,500 gallons per acre-foot of applied water!
  • Soil depth - 4’ of soil or more is recommended by Steve Solomon. More shallow soils may require wider plant spacing.
• Plants as indicators – Where on your land are un-irrigated plants still looking pretty green? This is a good indicator that plants are accessing moisture in that location late in the growing season.

Soil Preparation
• Timing is key! Start as early as possible, or as soon as the soil is dry enough to work and/or get a tractor onto the field. This often ranges anywhere from February to April in western Oregon depending on the site.
Soil Preparation (continued)

- Organic matter addition (e.g. cover crops, compost, biochar) is important for soil water holding capacity.
- Amending soil right before planting may burn roots in an un-irrigated system, so many dry farmers amend in the early spring or previous fall.
- For the OSU Dry Farming Demo at Corvallis the soil type is Woodburn Silt Loam, and soil preparation timing varied from 2015 to 2017 (see table below)

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<thead>
<tr>
<th>Date(s) for soil preparation activities</th>
<th>Planting Date(s)</th>
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<tbody>
<tr>
<td><strong>Year</strong></td>
<td><strong>Flail Mowed Cover Crop</strong></td>
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Planting Timing and Technique

- Plant when and where there is moisture
- Increased plant spacing – will vary from site to site based on soil water holding capacity and equipment, but a good starting would about double the spacing you would use for irrigation. A density trial might be a good way to dial it in for a specific location.
- Pressing soil around seed or transplant
  - Creates good seed to soil contact for germination
  - Creates capillary action wicking moisture to the surface to help plants get established
- Pre-soaking seed - Carol Deppe recommends pre-soaking seed for big-seeded crops like corn, beans, squash and melon, 24 hours before planting

Surface Protection

- Mulching – ‘dirt or dust mulch’ as it is often called is most common on small commercial farms. This involves cultivating to loosen the top few inches of soil. This practice is used to manage weeds and maintain moisture below this loose layer.
  - Surface protection or mulching may look different on a garden scale with deep mulches.
  - Deep mulch keeps soil temperature cooler, which may affect germination or direct seeded crops.
  - Some dry farmers use weed fabric or plastic mulch to warm soil and hold in soil moisture.

Crop Varietal Selection

- Drought-tolerant, early-maturing, or dry farmed varieties are often preferred.
- The following vegetable crops are most commonly dry farmed: tomato, potato, winter squash, zucchini, melon, dry beans, and corn (sweet and flour).

Resources
For more information and dry farming resources visit:
http://smallfarms.oregonstate.edu/dry-farm/resources