Controlling disorders in dry-farmed tomato

Dry-farmed tomatoes can produce yields of 20-30 tons per acre on good sites. However, the fruits are susceptible to disorders like blossom-end rot (BER), yellow shoulder, and sunscald. These blemishes have all been associated with dry farming and result from increased stress due to drought. In some cases, enough fruit are blemished to severely reduce marketable yields. The BER toolkit project aims to control physiological disorders by:

Sheltering the crop from the wind using a tall crop like corn or sorghum can help to reduce BER and increase fruit size. Windscreens may be an effective alternative.

Reducing the amount of fertilizer applied can reduce incidence of BER and increase fruit weights, but can also increase incidence of yellow shoulder and reduce fruit sugar concentrations.

Changing the plant spacing can affect BER and sunscald. We recommend that farmers grow dry-farmed tomatoes with a 7 to 10 ft between-row spacing and 16 to 24 inch in-row spacing.

Grafting onto tomato rootstocks Fortamino, Emperador, DRO141TX, or Maxifort can increase yields, increase fruit size, and drastically reduce incidence of BER. It may also influence the flavor intensity of dry-farmed tomato.

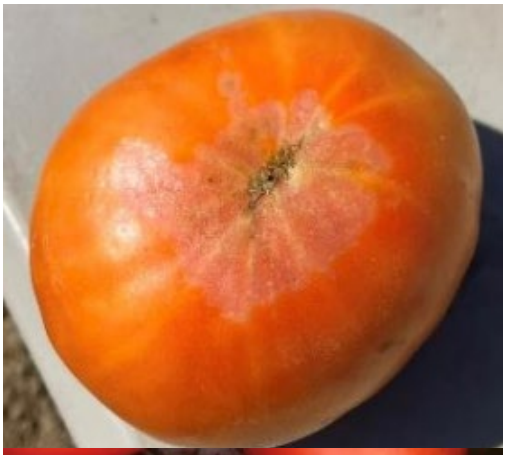
Pictures of tomato blemishes (descriptions from top to bottom)

Light blossom-end rot (BER) is associated with drought stress and excessive plant growth. Some farmers will sell this fruit as seconds.

Necrotic BER is caused by similar factors as light BER but the fruit are not marketable.

Yellow shoulder is a ripening disorder that is associated with drought stress and low soil fertility, especially low soil potassium concentrations.

Sunscald results from direct sunlight on green fruit. This can be exacerbated when dry farming due to reduced coverage of the fruit by the foliage and heat stress caused by drought.



How do you grow dry farmed tomatoes?

Site your dry farmed tomatoes in a suitable location – The soil should be a deep silt loam or silty clay loam without constraints on root growth. Soil compaction, a pH below 5.5, and very windy sites should be avoided.

Fertilizers can be applied in the fall or in the spring, before or after cover crop incorporation – Lime should be applied in the fall for best effect. If applying composted chicken manure in the spring, we recommend about a half a ton an acre.

Soil prep activities aim to preserve soil moisture – Farmers must terminate their cover crop early in the growing season to preserve soil moisture. However, they must not till when the soil is too wet, as this will compact the soil. Also, do not till too deeply, as tillage exposes soil moisture to evaporation.

Farmers must mow the cover crop prior to incorporating it. Then use a chisel plow to 8 inches depth to break up surface compaction. Follow this with a power harrow at 4-6 inches depth until the cover crop is incorporated. Wait at least two weeks for the cover crop to break down prior to planting.

Floor management minimizes soil moisture loss – After terminating the cover crop, farmers can conserve soil moisture by controlling weeds with shallow cultivation using a power harrow, rototiller, or wheel hoes.

Planting crops into moist soil – Aim to plant between early May and early June, after the risk of frost has passed and soil temperatures have warmed to around 60°F. Ensure transplants are well watered prior to transplanting. Transplants should not be too top heavy; they should be short and stocky with healthy roots. Open a furrow to expose moist soil and plant deeply. Watering-in is not necessary.

Trellising – Trellising in a basket weave can help to reduce sunscald as long as plants are not pruned.

Powdery mildew – Powdery mildew is a serious problem in dry-farmed tomatoes. It can defoliate plants, decrease sugar concentrations in fruit, and increase incidence of yellow shoulder.

Terroir is the characteristic flavor or taste that is imbued into wine by the environment (soil and climate) in which it is grown. The same effect can be seen in dry-farmed tomatoes.

Sugar concentrations in dry-farmed 'Early Girl' tomatoes ranged from 5 to 10 °Brix in 2023 depending on site and growing practices.

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Produced by the BER toolkit project at OSU.
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For more information on dry farm tomato production, we recommend:
https://horticulture.oregonstate.edu/article/blossom-end-rot-toolkit-dry-farmed-tomatoes
https://agroecology.ucsc.edu/resources/publications/grower-guides/pdf-downloads/dry-farmed-tomatoes.pdf