

## Dry Farm Tomato Variety Trial 2020: High Performing Variety Descriptions

**GOAL:** Identify tomatoes of diverse types and colors that are productive and exhibit low blossom end rot (BER) incidence when grown under dry farm conditions.

### METHODS

Field location and soil: The variety trial was conducted at the Oregon State University Vegetable Research Farm on a Chehalis silt loam, an excellent soil for dry farming due to its high available water holding capacity and friability (absence of firm/impermeable layers).

Tomato varieties were selected as they were 1) reported to be blossom end rot (BER) resistant, 2) regional farm or seed company favorites, or 3) OSU tomato breeding program germplasm. Rootstocks were selected as they were grown by regional farms and/or available as organic seed.

Management: Grafted and ungrafted tomato transplants were organically grown. Five plants of each variety or scion/rootstock combination were planted into 5 x 15 ft sq plots, with no replication (one plot per variety).

Data collection: Tomatoes were harvested weekly. Tomatoes were harvested from all 5 plants in plot early in the season and from 3 plants per plot starting mid-season. All fruits, as well as fruits exhibiting BER, were weighed and counted through 9/7/20. After a 1.3 inch rain on 9/17/20, split fruits were weighed and counted on 9/22/20. Catfacing and green shoulder presence were noted throughout the season. Data collection on small-fruited tomatoes (cherry and saladette types) was discontinued early in the season as these small-fruited types did not exhibit BER and project resources were insufficient to take harvest data on all plots.

### RESULTS

Blossom end rot (BER) is the most critical problem reducing marketable yield in dry farm tomato production. Varieties and scion/rootstock combinations exhibiting BER incidence greater than 15% were removed from consideration. The varieties and scion/rootstock combinations listed below all exhibited BER incidence less than 15%. Variety descriptions are grouped by tomato color and alphabetized and numbered within color groups. Paste and grafted tomatoes are grouped separately.

The varieties and scion/rootstock combinations with highest unblemished yield (ungrafted > 25 T/A, grafted > 50T/A) are listed in **Table 1** below.

Additional information can be found in the appendices:

- Appendix A. Variety photos (photos taken by project, not all varieties have photos).
- Appendix B. Season-long yield, BER incidence, and fruit size data figures.
- Appendix C. Grafted tomato trial report.
- Appendix D. List of small-fruited varieties grown in trial (no yield/quality data).
- Appendix E. List of varieties of high BER incidence (unsuitable for dry farm production, no yield/quality data).

**Table 1: Varieties and Scion/Rootstock Combinations of Highest Unblemished Yield**

*Highest unblemished yields (ungrafted > 25 T/A, grafted > 50T/A) in tomatoes of <15% BER. Fresh eating tomato average fruit size > 0.20 lbs. Column color indicates fruit color group.*

Variety	Total yield unblemished fruit (T/A)	BER (%)	Average fruit size (lbs)
Astrakhanskie	37	6	0.68
<b>Big Beef x DRO141TX</b>	<b>62</b>	<b>1</b>	<b>0.53</b>
<b>Big Beef x Fortamino</b>	<b>88</b>	<b>2</b>	<b>0.80</b>
Marmande	43	1	0.27
Mavritanskite	29	9	0.56
Nevsky	25	8	0.41
Azoychka	43	1	0.35
<b>BHN871 x DRO141TX</b>	<b>70</b>	<b>5</b>	<b>0.61</b>
<b>BHN871 x Fortamino</b>	<b>53</b>	<b>3</b>	<b>0.49</b>
Dwarf Sweet Sue	26	3	0.52
Manyel	30	5	0.28
Siberian Giant Pink	33	1	0.63
Tiffen Mennonite	29	0	0.63
Cherokee Purple	35	7	0.50
Fantome du Laos	27	1	0.29
White Tomesol	32	6	0.29
Teardrop (paste)	28	1	0.12

## **VARIETY DESCRIPTIONS**

Small fruited (cherry/saladette) varieties are not included in this list as they do not, as a group, exhibit BER; small fruited tomatoes grown in the trial are listed in Appendix C. It is likely that all/most small fruited tomato varieties can be dry-farmed successfully with little to no risk of losses due to BER.

Large-fruited and paste tomato varieties including grafted scion/rootstock combinations exhibiting less than 15% BER incidence throughout the season are listed below.

\*indicates the seed source. Seed source names are hyperlinked to the variety description at that source.

## **FRESH EATING TOMATOES (SLICERS, BEEFSTEAKS)**

### **Red**

#### **1. Astrakhanskie – [Adaptive Seeds](#)\***

- indeterminate, OP, available as organic seed
- heirloom from Astrakhan region of Russia
- oblate/lobed red beefsteak: fruit size decreased from 16 to 8 oz over season
- 6% BER, no split data, susceptible to catfacing/green shoulders
- total yield: 43.6 tons/A

#### **2. Cosmonaut Volkov – [Springhill Farm](#)\*, [High Mowing Seeds](#), [Territorial Seed Company](#)**

- determinate, OP, available as organic seed
- Ukrainian variety named after Russian cosmonaut Vladislav Volkov, who was killed during the landing of the Russian spaceship Soyuz 11, along with his other crew members.
- oblate red beefsteak, green shoulders: fruit size 4-5 oz through season
- 3% BER, 52% split after rain, susceptible to green shoulders
- total yield: 20.5 tons/A

#### **3. Costoluto Fiorentina – [Portland Seedhouse](#)\*, [Territorial Seed Company](#)**

- indeterminate, OP, available as organic seed
- Italian heirloom from Florence
- slightly flattened, ribbed, red beefsteak: fruit size 3 oz through season
- 15% BER, 21% split after rain, susceptible to catfacing and green shoulders
- total yield: 32.3 tons/A

#### **4. Dwarf Beauty King – [Victory Seeds](#)\*, [TomatoFest](#)**

- indeterminate dwarf, OP, available as organic seed
- from Dwarf Tomato Project, stable cross between 'Dwarf Wild Fred' and 'Beauty King'
- oblate beefsteak with golden stripes/speckles: fruit size decreased from 13-3 oz over season
- 3% BER, 0% split after rain (out of 3 tomatoes), susceptible to catfacing
- total yield: 18.5 tons/A

**5. Dwarf Champion #15 – [Victory Seeds\\*](#), [Restoration Seeds](#)**

- indeterminate, OP, available as organic seed
- from Dwarf Tomato Project
- globe to oblate-shaped slicers: fruit size maintained at 3 oz through season
- 13% BER, 58% split after rain, susceptible to catfacing and green shoulders
- total yield: 23.2 tons/A

**6. Early Girl Dehybridized – Gales Meadows Farm\***

- indeterminate, OP, organic starts available through Gales Meadow Farm
- Anne Berblinger of Gales Meadow Farm produced this dehybridized OP from Early Girl
- globe-shaped slicer: fruit size maintained at 2-3 oz through season
- 6% BER, 63% split after rain
- total yield: 34.7 tons/A

**7. Fireworks – [Adaptive Seeds\\*](#)**

- determinate, OP, available as organic seed
- bred by Tim Peters of Peters Seed and Research in Riddle, OR.
- globe-shaped slicers: fruit size maintained at 3-4 oz through season
- 1% BER, 100% split after rain, susceptible to catfacing
- total yield: 15.5 tons/A

**8. Frederik – [Vitalis Organic Seeds\\*](#), [Johnny's Selected Seeds](#), [Territorial Seed Company](#)**

- indeterminate, hybrid, available as organic seed
- bred by Vitalis for indoor production with high resistance to leaf mold and powdery mildew
- firm round slicer: fruit size maintained at 4-5 oz fruit through season
- 2% BER, 71% split after rain
- total yield: 33.4 tons/A

**9. Genovese Cimelo Liguria – [Portland Seedhouse\\*](#)**

- indeterminate, OP, available as organic seed
- Italian heirloom
- flat, round, ribbed, beefsteak, green shoulders: fruit size 6 oz through season
- 12% BER, 67% split after rain, susceptible to catfacing
- total yield: 21.2 tons/A

**10. Giant of Siebenburgen – [Adaptive Seeds\\*](#)**

- indeterminate, OP, available as organic seed
- from Transylvania; given to Seed Ambassadors Project by Gerard Bohl of Germany
- large ribbed oxheart: fruit size varied from 10 to 15 oz fruit depending on week
- 12% BER, 45% split after rain
- total yield: 27.8 tons/A

**11. Great Lakes – [Seed Revolution Now](#)\***

- indeterminate, OP, available as organic seed
- bred in Michigan
- round, smooth, meaty slicer: fruit size 5-6 oz through season
- 13% BER, 44% split after rain
- Total yield: 27.8 tons/A

**12. Jersey Breeze – [Seed Revolution Now](#)\***

- indeterminate, OP, available as organic seed
- oblate fruit: fruit size maintained at 6-7 oz through season
- 11% BER, 62% split after rain, susceptible to catfacing
- total yield: 34.7 tons/A

**13. LB21-7-4 – OSU\***

- indeterminate, OP, not yet commercially available
- from Jim Myers OSU late blight tomato breeding program
- slicer: fruit size ranged from 6-10 oz depending on the week
- 0% BER, 68% split after rain, susceptible to catfacing
- total yield: 27.1 tons/A

**14. Marglobe – [Victory Seeds](#)\*, [TomatoFest](#)**

- determinate, OP, available as organic seed
- bred by Fred J. Pritchard for the USDA in 1917. Its resistance to nail-head spot saved the tomato industry in Florida; it parents many other later tomato varieties.
- early round, smooth, solid slicer: fruit size maintained at 2 oz through season
- 2% BER, 58% splitting, susceptible to green shoulders
- total yield: 34.2 tons/A

**15. Marmande – [Portland Seedhouse](#)\*, [Adaptive Seeds](#)**

- semi-determinate, OP, available as organic seed
- French heirloom
- early meaty oblate/lobed beefsteak: fruit size maintained at 4-5 oz through season
- 1% blossom end rot, 54% split after rain, susceptible to catfacing/green shoulders
- total yield: 48.9 tons/A

**16. Mavritanskite – [Adaptive Seeds](#)\***

- indeterminate, OP, available as organic seed
- Latvian heirloom sourced from Madeline McKeever of Brown Envelope Seeds in Ireland
- ribbed beefsteak, dark shoulders: fruit size decreased from 13 to 6 oz as season progressed
- 9% BER, 56% split after rain, susceptible to green shoulders and catfacing
- total yield: 37.2 tons/A

**17. Nevsky – [Adaptive Seeds](#)\***

- indeterminate dwarf, OP, available as organic seed
- Old Russian commercial heirloom variety sourced from Tatiana's TOMATObase
- meaty, round, mid-season slicer: fruit size from 4 to 7 oz depending on the harvest
- 8% BER, 55% split after rain, susceptible to green shoulders
- total yield: 33.2 tons/A

**18. Oregon Spring – OSU\*, [Johnny's Selected Seeds](#)**

- determinate, OP, available as organic seed
- developed by Dr. James Baggett at Oregon State University
- early, cold tolerant round red slicer: fruit size maintained at 3 oz through season
- 3% BER, 74% split after rain, susceptible to green shoulders
- total yield: 21.1 tons/A

**19. Perfect Rogue – [Adaptive Seeds](#)\***

- semi-determinate, OP, available as organic seed
- Adaptive Seeds selected this variety from Early Girl F1 for fruit size, shape, and flavor.
- perfect globes: fruit size ranged from 3-5 oz depending on the harvest
- 12% BER, 47% split after rain, susceptible to catfacing
- Total yield: 25.2 tons/A

**20. Riñon Rippled Delight – [Experimental Farm Network](#)\***

- indeterminate, OP, available as organic seed
- EFN selected this from the highly variable Cuban Riñon tomato
- flat ribbed slicer: fruit size maintained at 2 oz through season
- 3% BER, 81% split after rain, susceptible to catfacing
- total yield: 20.9 tons/A

**21. Spring King – [Adaptive Seeds](#)\***

- determinate, OP, available as organic seed
- bred by Tim Peters of Peters Seed and Research in Riddle, Oregon.
- early oblate slicer: fruit size ranged from 2-5 oz depending on the harvest
- 3% BER, 31% split after rain, susceptible to green shoulders and catfacing
- total yield: 24.3 tons/A

**22. Starfire – [Adaptive Seeds](#)\***

- determinate, OP, available as organic seed
- bred in 1963 at the Morden Experimental Farm in Manitoba, Canada.
- slicer: fruit size ranged from 2-8 oz depending on the harvest
- 8% BER, 53% split after rain
- total yield: 28.3 tons/A

## Yellow/Orange

### **23. Azoychka – [Adaptive Seeds](#)\***

- indeterminate, OP, available as organic seed
- Russian variety bred by Valentina Petrovna Kruglova.
- oblate slicer: fruit size decreased from 8 to 4 oz through season
- 1% BER, 73% split after rain, susceptible to catfacing
- total yield: 42.5 tons/A

### **24. Beorange – [Johnny's Selected Seeds](#)\***

- indeterminate, hybrid, available as organic seed
- globe-shaped beefsteak: fruit size ranged from 3-6 oz depending on the harvest
- 13% BER, 34% split after rain
- total yield: 23.0 tons/A

### **25. Dwarf Confetti – [Adaptive Seeds](#)\***

- indeterminate dwarf, OP, available as organic seed
- developed by members of the Dwarf Tomato Project
- oblate, striped, golden beefsteak with pink/yellow flesh: fruit size maintained at 6-7 oz through season
- 7% BER, no split data, susceptible to catfacing
- total yield: 15.6 tons/A

### **26. Dwarf Lemon Ice – [Adaptive Seeds](#)\***

- indeterminate dwarf, OP, available as organic seed
- developed by members of the Dwarf Tomato Project.
- icy yellow, mini oxheart tomatoes: fruit size maintained at 3 oz through season
- 1% BER, no split data, susceptible to green shoulders
- total yield: 17.7 tons/A

### **27. Dwarf Sweet Sue – [Victory Seeds](#)\***

- indeterminate dwarf, OP, not available as organic seed
- developed by Dwarf Tomato Project: 'Golden Dwarf Champion' x 'Green Giant' cross
- round to oblate yellow beefsteak, pink blossom end blush: fruit size 8-9 oz through season
- 3% BER, 92% split after rain, susceptible to catfacing
- total yield: 29.9 tons/A

### **28. Gold Medal – [Uprising Seeds](#)\*, [Territorial Seed Company](#)**

- indeterminate, OP, available as organic seed
- featured in America's first seed catalog by John Lewis Childs in 1921. originally 'Ruby Gold'; Ben Quisenberry of Big Tomato Gardens renamed it in 1976.
- gold beefsteak blushing pink/red: fruit size ranged from 3 to 11 oz depending on harvest
- 5% BER, 67% split after rain, susceptible to catfacing
- total yield: 22.4 tons/A

**29. Manyel – [Uprising Seeds](#)\***

- indeterminate, OP, available as organic seed
- Native American heirloom
- lemon yellow globes: fruit size maintained at 4-5 oz through season
- 5% BER, 70% split after rain
- total yield: 38.9 tons/A

**30. Native Sun – [Adaptive Seeds](#)\***

- determinate, OP, available as organic seed
- bred by Tim Peters of Peters Seed and Research
- early yellow slicer: fruit size maintained at 3 oz through season
- 7% BER, 37% split after rain
- total yield: 23.7 tons/A

**Pink**

**31. Mt Miracle XL Pink Hybrid Swarm – [Experimental Farm Network](#)\*, [Wild Mountain Seeds](#)**

- indeterminate, hybrid, available as organic seed
- early pink beefsteak: fruit size ranged from 6 to 19 oz depending on the harvest
- 12% BER, 57% split after rain, susceptible to catfacing
- total yield: 25.1 tons/A

**32. Siberian Giant Pink – [Adaptive Seeds](#)\***

- indeterminate, OP, available as organic seed
- Siberian variety from Tamara Yaschenko, original name *Sibirskiy Velikan Rozovyi*
- meaty ribbed pink beefsteak: fruit size ranged from 6-13 oz depending on harvest
- 1% BER, 59% split after rain, susceptible to green shoulders and catfacing
- total yield: 36.8 tons/A

**33. TastyWine – [Victory Seeds](#)\*, [TomatoFest](#)**

- indeterminate dwarf, OP, available as organic seed
- developed by members of the Dwarf Tomato Project: 'Dwarf Wild Fred' x 'Brandywine'
- deep pink oblate slicer: fruit size ranged from 4 to 10 oz depending on the harvest
- 0% BER, 80% split after rain, susceptible to catfacing and green shoulders
- total yield: 13.2 tons/A

**34. Tiffen Mennonite – [Adaptive Seeds](#)\***

- indeterminate, OP, available as organic seed
- from the Wisconsin Mennonites, introduced to SSE in 1985 by Thane Earle of Wisconsin
- ribbed, oblate pink beefsteak: fruit size ranged from 8-15 oz depending on the harvest
- 0% BER, 60% split after rain, susceptible to catfacing and green shoulders
- total yield: 36.9 tons/A



## Purple

### **35. Boronia – [Victory Seeds](#)\***

- determinate dwarf, OP, organic seeds unavailable
- developed by members of the Dwarf Tomato Project: 'New Big Dwarf' x 'Paul Robeson'
- meaty oblate purple beefsteak: fruit size maintained at 7-8 oz through season
- 6% BER, 89% split after rain, susceptible to catfacing
- total yield: 22.7 tons/A

### **36. Cherokee Purple – [Johnny's Selected Seeds](#)\*, [Territorial Seed Company](#)**

- indeterminate, OP, available as organic seed
- Cherokee heirloom introduced to Johnny's Selected Seeds by Craig LeHoullier
- smooth flattened deep purple coreless beefsteak: fruit size maintained at 8 oz through season
- 7% BER, 86% split after rain, susceptible to catfacing
- total yield: 42.0 tons/A

### **37. Sokolades – [Adaptive Seeds](#)\***

- indeterminate, OP, available as organic seed
- Latvian heirloom given to the Seed Ambassadors Project by Irish Seed Savers Association
- globe-shaped purple beefsteak, green shoulder: fruit size 6 oz through season
- 7% BER, 92% split after rain, susceptible to green shoulders
- total yield: 20.8 tons/A

## White

### **38. Fantome du Laos – [Adaptive Seeds](#)\***

- indeterminate, OP, available as organic seed
- 'Ghost of Laos': Laotian tale goes "when ghosts are afoot, it will glow in the dark."
- ribbed flattened white beefsteak: fruit size decreased from 6 to 4 oz through season
- 1% BER, 58% split after rain, susceptible to catfacing and green shoulder
- total yield: 29.5 tons/A

### **39. White Tomesol – [Adaptive Seeds](#)\***

- indeterminate, OP, available as organic seed
- lobed slightly flattened beefsteak: fruit size decreased from 5 to 3 oz through season
- 6% BER, 81% split after rain, susceptible to catfacing and green shoulders
- total yield: 38.3 tons/A

## Black

### **40. 'Oh My' Black Hybrid Swarm – [Experimental Farm Network](#)\*, [Wild Mountain Seeds](#)**

- indeterminate, hybrid, available as organic seed
- black beefsteak: fruit size decreased from 9 to 3 oz through season
- 6% BER, 0 split after rain (out of 8), susceptible to catfacing and green shoulders
- total yield: 17.4 tons/A

**41. Paul Robeson – [Adaptive Seeds](#)\***

- indeterminate, OP, available as organic seed
- Russian variety named to honor Paul Robeson, a social activist, athlete, singer and actor
- rust-colored beefsteak: fruit size ranged from 2 to 6 oz depending on the harvest
- 8% BER, 87% split after rain, susceptible to catfacing and green shoulders
- total yield: 24.0 tons/A

**42. Sarah Black – [Adaptive Seeds](#)\***

- indeterminate, OP, available as organic seed
- German heirloom, received from Gerhard Bohl, a German seed steward.
- purple-black flattened globe beefsteak: fruit size decreased from 10 to 4 oz through season
- 2% BER, 100% split after rain, susceptible to catfacing.
- total yield: 21.6 tons/A

**43. Tasmanian Chocolate – Dwarf Tomato Project\*, [Johnny's Selected Seeds](#)**

- indeterminate dwarf, OP, available as organic seed
- bred by Craig LeHoullier of the Dwarf Tomato Project: 'New Big Dwarf' x 'Paul Robeson'
- Black oblate slicers: fruit size ranged from 2 to 6 oz depending on the harvest
- 7% BER, no split data, susceptible to catfacing and green shoulders
- total yield: 23.8 tons/A

**PASTE TOMATOES**

**Red**

**44. Baylor Paste – [Adaptive Seeds](#)\***

- indeterminate, OP, available as organic seed
- meaty, elongated egg-shaped: fruit size decreased from 3 to 2 oz through season
- 11% BER, 48% split after rain, susceptible to green shoulders
- total yield: 22.3 tons/A

**45. Fabel – [Nichol's Garden Nursery](#)\*, [Adaptive Seeds](#)**

- determinate, OP, available as organic seed
- Soviet-era Moldovan variety brought to the U.S. by Kate Gessert in early 1990s
- slightly oval paste, grows in clusters: fruit size maintained at 1-2 oz through season
- 6% BER, 46% split after rain
- total yield: 23.5 tons/A

**46. Quadro – [Adaptive Seeds](#)\***

- indeterminate, OP, available as organic seed
- bred by Dr. Hartmut Spiess, collected by The Seed Ambassadors Project in 2007 from Bingenheimer Saatgut
- blocky, almost cube-shaped: fruit size decreased from 3 to 2 oz through season
- 5% BER, 78% split after rain, susceptible to green shoulders
- total yield: 22.0 tons/A

#### **47. Teardrop – Sunbow Farm\***

- determinate, OP, available as organic seed
- bred by Harry McCormack of Sunbow Farm, Corvallis, OR
- small, firm, blocky paste: fruit size decreased from 3 to 1.5 oz through season
- 1% BER, 58% splitting (after heavy rain)
- total yield: 29.7 tons/A

#### **Yellow**

#### **48. Lampchen – [Adaptive Seeds](#)\***

- indeterminate, OP, available as organic seed
- given to Seed Ambassadors Project in 2007 by Gerhard Bohl, a seed collector in Germany
- thick-walled yellow paste: fruit size ranged from 2 to 5 oz depending on the harvest
- 8% BER, 77% split after rain, susceptible to green shoulders
- total yield: 25.7 tons/A

**GRAFTED** – Data either from OSU trial or averaged for the two separate trials.

*Grafted Wisconsin 55 met criteria but not included below due to unacceptably soft fruit*

#### **49. BHN 871 on DRO141TX**

- BHN871: modern determinate hybrid: flattened globe-shaped golden tomatoes
- OSU Data:
  - fruit size ranged from 5-10 oz depending on the harvest
  - 5% BER, 22% split after rain, susceptible to catfacing
  - total yield: 82.1 tons/A
- OSU + On Farm Trial data averages:
  - fruit size 4-10 oz.
  - 14% BER, 31% split after rain, susceptible to catfacing
  - total yield: 61.9 tons/A

#### **50. BHN 871 on Fortamino**

- BHN871: modern determinate hybrid: flattened globe-shaped golden tomatoes
- OSU + On Farm Trial data averages:
  - fruit size 3 - 8 oz
  - 5% BER, 32% split after rain, susceptible to catfacing
  - total yield: 49.6 tons/A

#### **51. Big Beef on DRO141TX**

- Big Beef: 1994 AAS winner; indeterminate hybrid; globe-shaped red beefsteak
- OSU + On Farm Trial data averages:
  - fruit size 2-10 oz.
  - 5% BER, 53% splitting after rain, susceptible to catfacing and green shoulders
  - Total yield: 63.3 tons/A

### **52. Big Beef on Fortamino**

- Big Beef: 1994 AAS winner; indeterminate hybrid; globe-shaped red beefsteak
- OSU Data:
  - fruit size from 6-19 oz depending on harvest
  - 2% BER, 63% split after rain, susceptible to catfacing
  - total yield: 97.8 tons/A

### **53. Momotaro on Fortamino**

- Momotaro: indeterminate hybrid popular in Japan; globe-shaped pink slicer
- OSU data:
  - fruit size from 3-8 oz depending on harvest
  - 3% BER, 67% split after rain
  - total yield: 46.5 tons/A

### **54. New Girl on DRO141TX**

- New Girl: improved Early Girl; indeterminate hybrid; round red slicer
- OSU + On Farm Trial data averages:
  - fruit size 2-4 oz.
  - 10% BER, 20% split after rain, susceptible to green shoulders
  - total yield: 44.3 tons/A