

2020 Dry Farming Collaborative Dry Bean Variety Trials

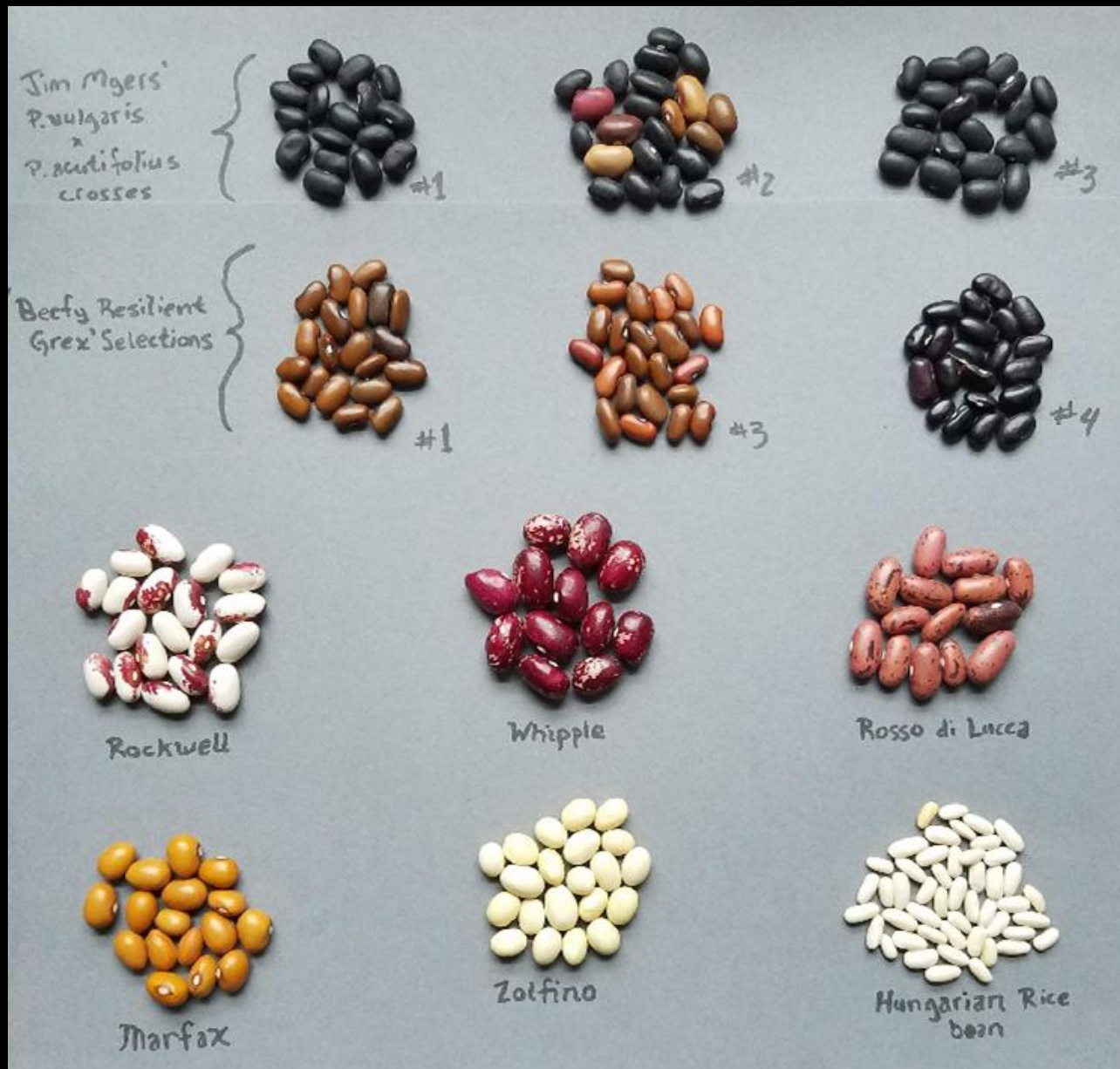
Lucas Nebert



2020 Dry Farm Variety Trials

Common Beans, *Phaseolus vulgaris* →

Tepary Beans, *Phaseolus acutifolius* ↓



Tepary Beans

Phaseolus acutifolius



- Southwestern U.S., Northern Mexico
- Drought tolerant
- Good animal forage crop
- High fiber and good storage properties



Interspecies cross



Phaseolus vulgaris x *Phaseolus acutifolius*

- Embryo rescue
- Back-crossed to common bean for 4 generations
- “JM1”, “JM2”, and “JM3” are drought tolerant accessions
- Upright plant architecture



Jim Myers, OSU Dept. of Horticulture

Beefy Resilient Grex Selections

Beefy Resilient Grex: Carol Deppe's (Fertile Valley Seeds) OSSI Pledged Variety.

- Prolific, indeterminate bush bean cross between Gaucho (originally from Argentina) and Black Mitla "tepary" (Oaxaca).
- Amy Garrett has made single-plant selections of plants that performed well dry farmed.
- Slight runner habit



Heirloom Common Beans, *Phaseolus vulgaris*

Rockwell (Uprising Seeds) - Ark of Taste heirloom from Whidbey Island (late 1800s). Early with slight runner habit.

Whipple (Adaptive Seeds) - Large purple bean introduced to the Willamette Valley in the 1970's by the Whipple Family, slight runner habit.

Rosso di Lucca (Uprising Seeds) - Hearty, Ark of Taste heirloom from Italy.

Marfax (Uprising Seeds) - Early, determinant bush bean staple from Maine (1930s), Toothsome even after slow cooking.

Zolfino (Uprising Seeds) - Ark of Taste heirloom from Italy. Thin-skinned and creamy; slight running habit.

Hungarian Rice Bean (Uprising Seeds) - Small bean on prolific pods. Related to Flageolet Vert.



Tepary Beans, *Phaseolus acutifolius*

- Sacaton Brown – Adaptive Seeds
- Blue Speckled – Restoration Seeds, Pueblo Seeds and Azure Dandelion(CO)
- Black PT082 - Native Seeds SEARCH
- Tim Porch, USDA ARS
 - TARS-Tep 22, 32 - bred for drought and heat tolerance, resistance to bacterial blight and seed weevils
 - TARS-Tep 23, 93 - restricted
- Richard Pratt, UNM
 - Maricopa White / Brown
 - Mike Sheedy at the University of Arizona Maricopa Agriculture Center
 - Chiapas speckled (not pictured) light grey speckled variety from Chiapas, Mexico
 - Mass selected for drought tolerance, forage crops

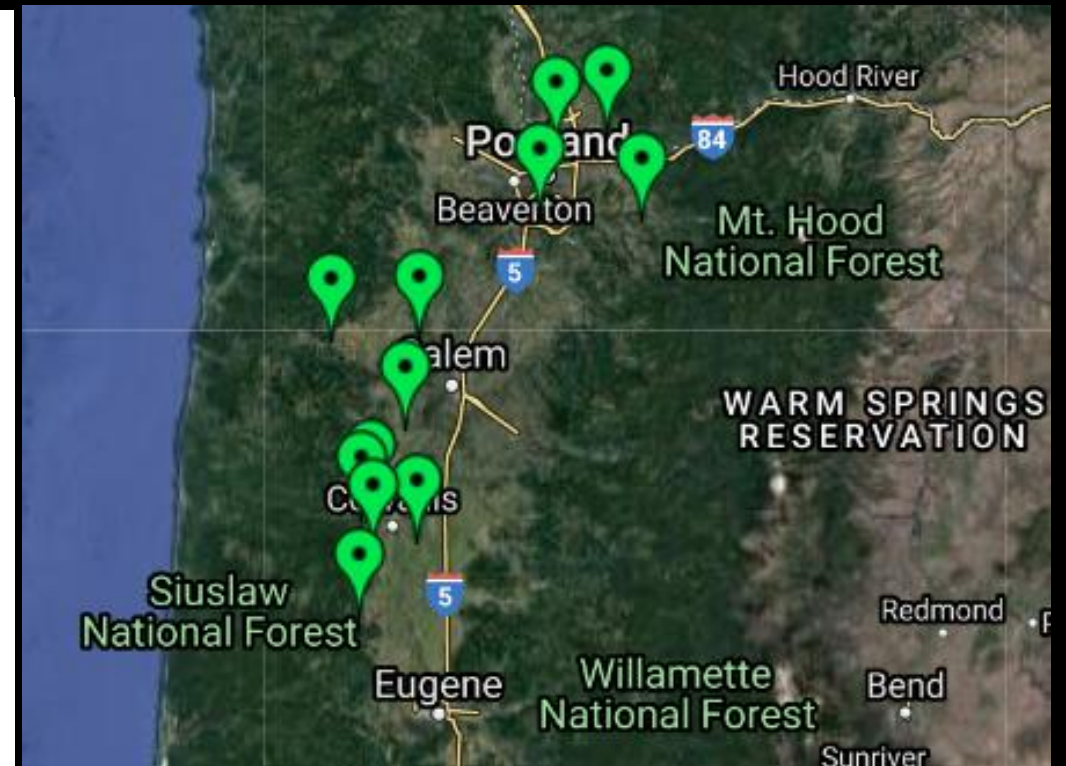
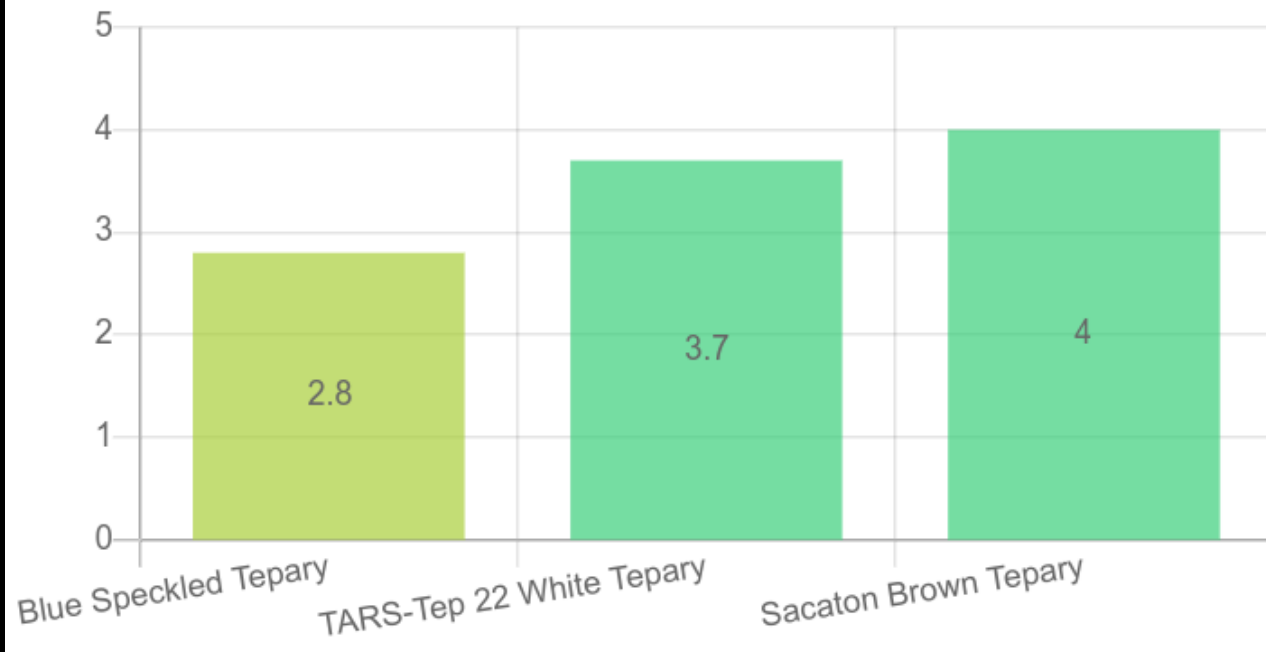
★ = SeedLinked Variety Trial



SeedLinked Variety Trials



Trial Results for Vigor (6 Ratings)



2020 Bean Variety Trials

Quantitative Field Assessments

- Common Beans: Dry Farmed vs. Irrigated at 2 Sites
 - Irrigated ~1" per week, until mid August.
- Tepary Beans: Dry Farmed at 3 sites
- Single, 20 ft. row, 6" spacing
- Planted first week of June

OSU Vegetable research farm

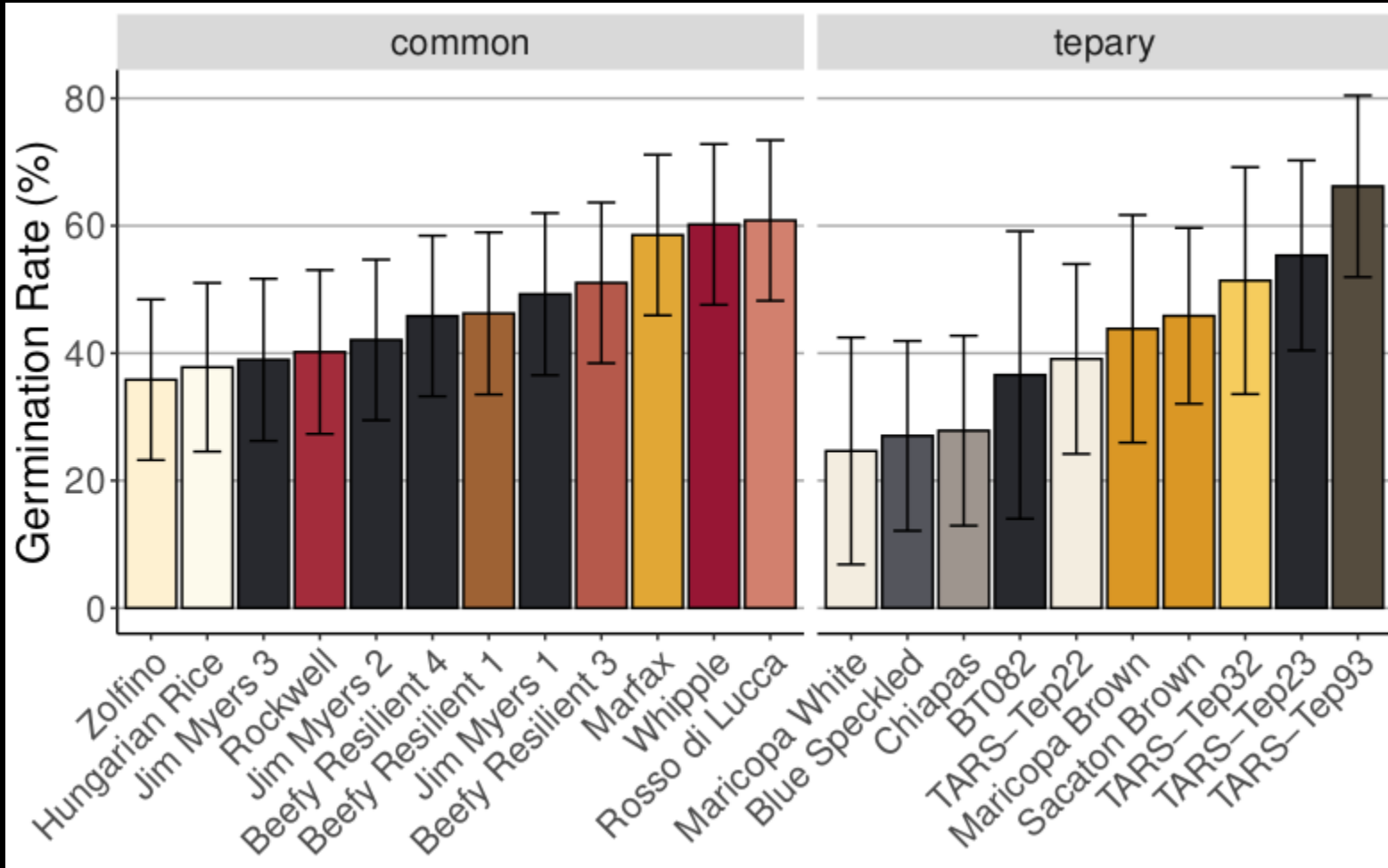


OSU Lewis Brown Farm

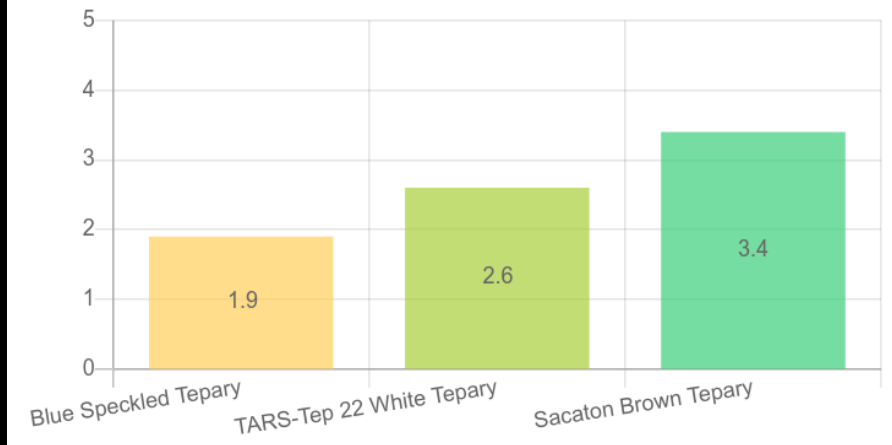
- Tepary Beans → Dry Farmed
- Corn Trial →
- Common Beans → Dry Farmed and Irrigated



Results: Stand Establishment



Trial Results for Germination (5 Ratings)



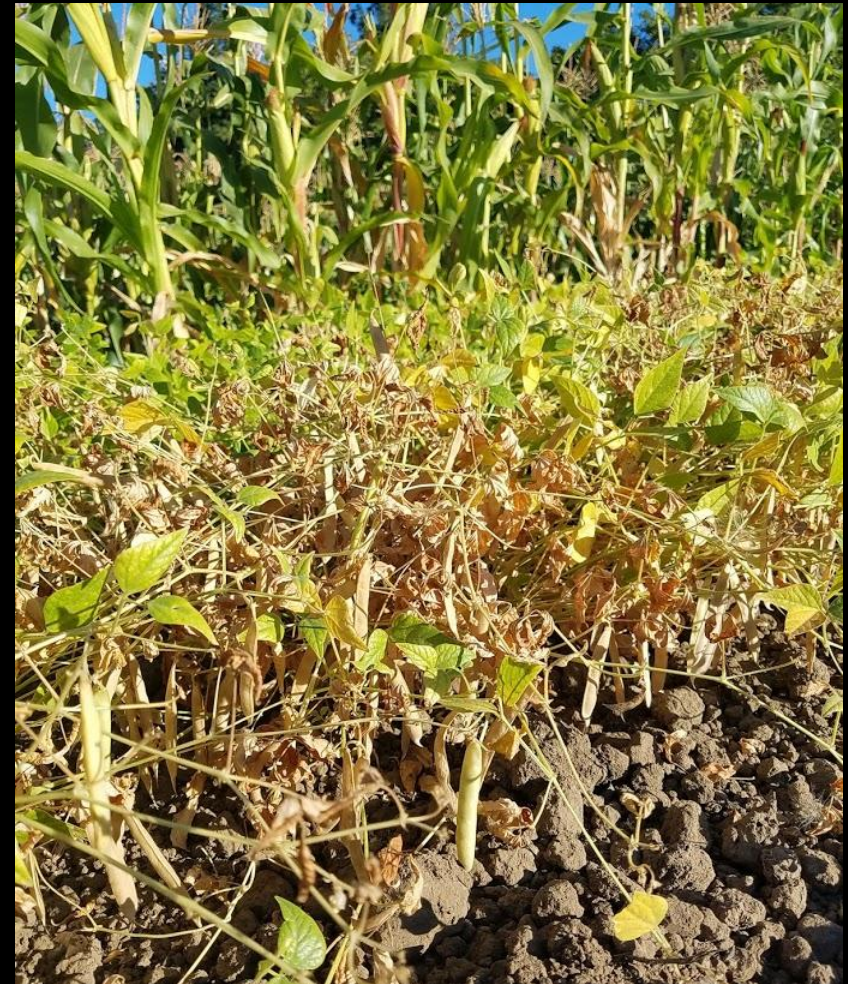
Dry Farmed vs. Irrigated common beans, August 5th 2020



Wildfire smoke in early
September, 2020



Dry Farmed teparies, early August and early September



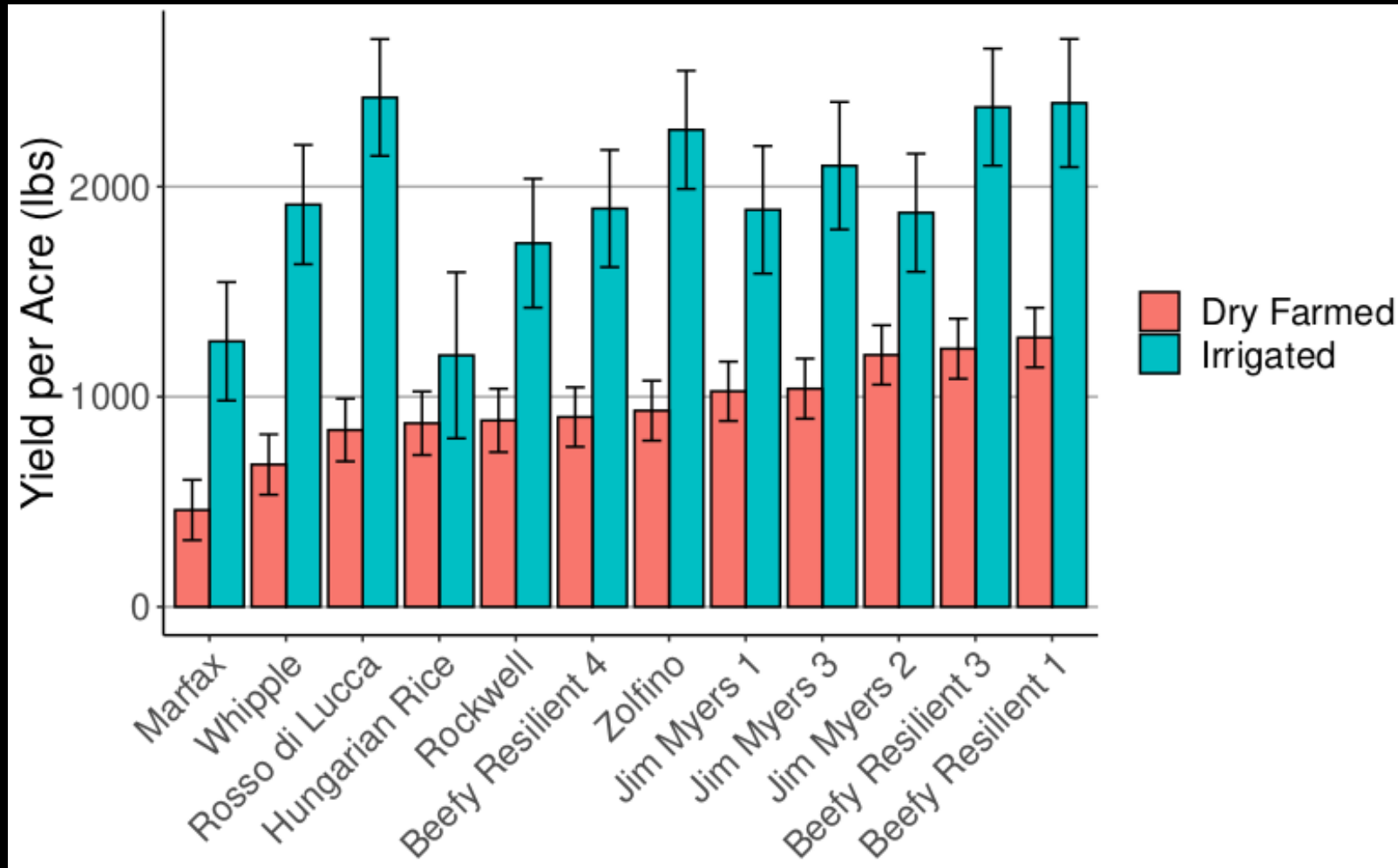
Earliness

Days to Maturity, June-Sept 2020	Varieties
90-100 Days	All teparies (nearly), Beefy Resilient #4
100-110 Days	Black tepary BT082, Marfax > Rockwell > Rosso di Lucca > Beefy Resilient #1,3
110-120 Days	Whipple > Jim Myers' interspecies crosses #1-3 > Hungarian Rice, Zolfino

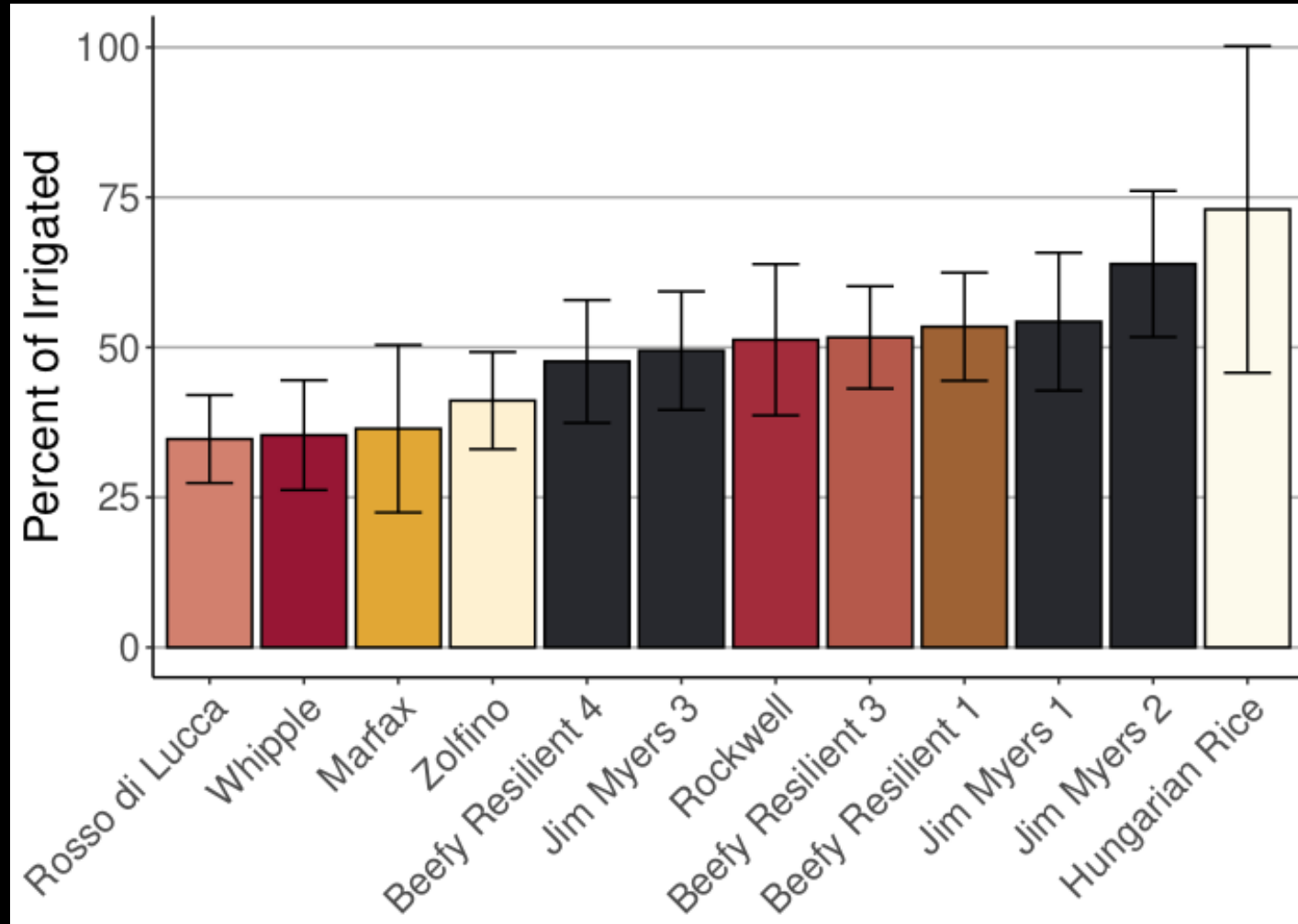
Dry farmed beans matured up to a week earlier than irrigated, less prone to mold, and easier threshing



Common Bean Yield, Dry Farmed vs. Irrigated

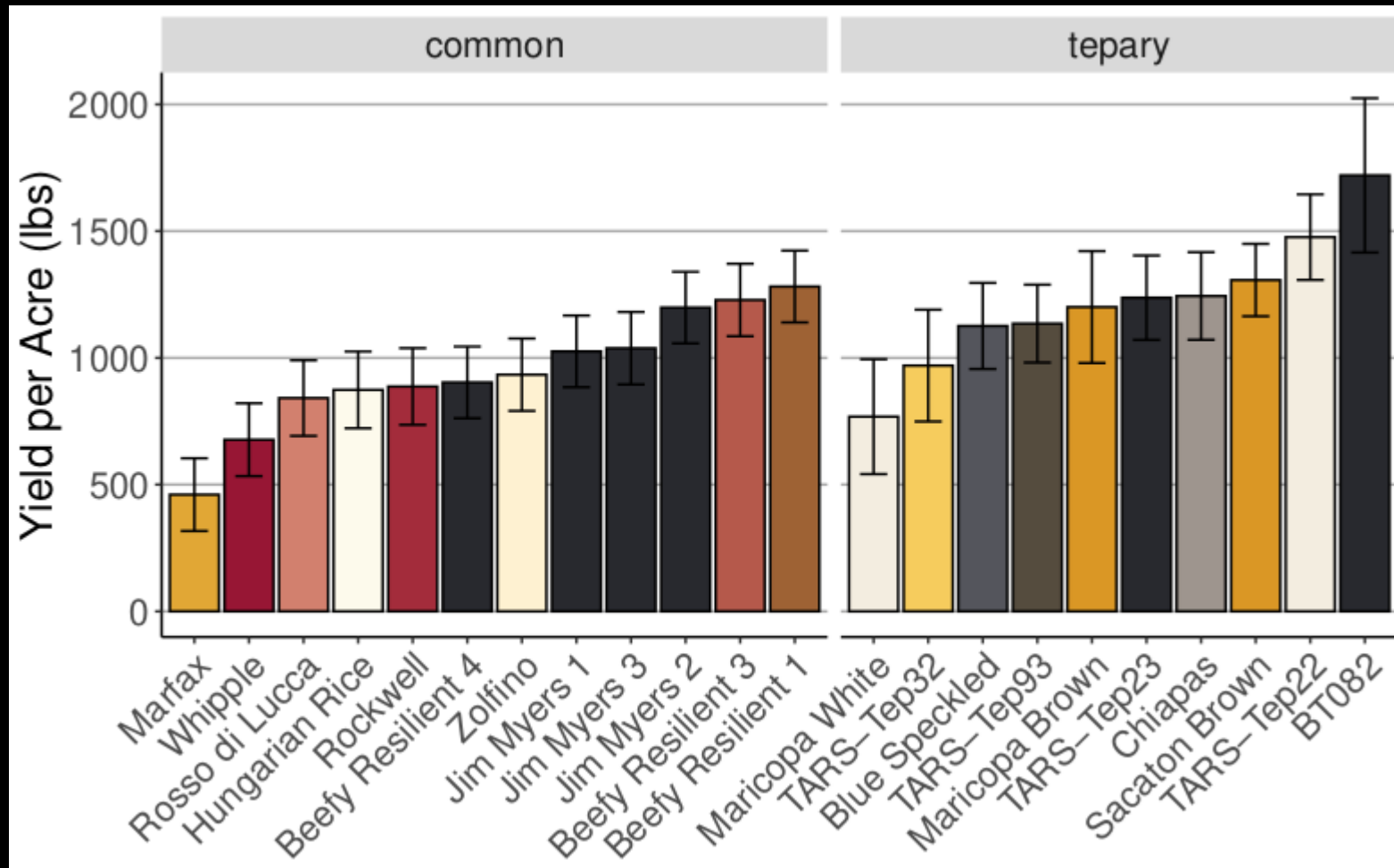


Common Bean Yield, as a percent of irrigated



Average yield reduction of dry farming: ~50%

Dry Farmed Yield of Common Beans and Teparies



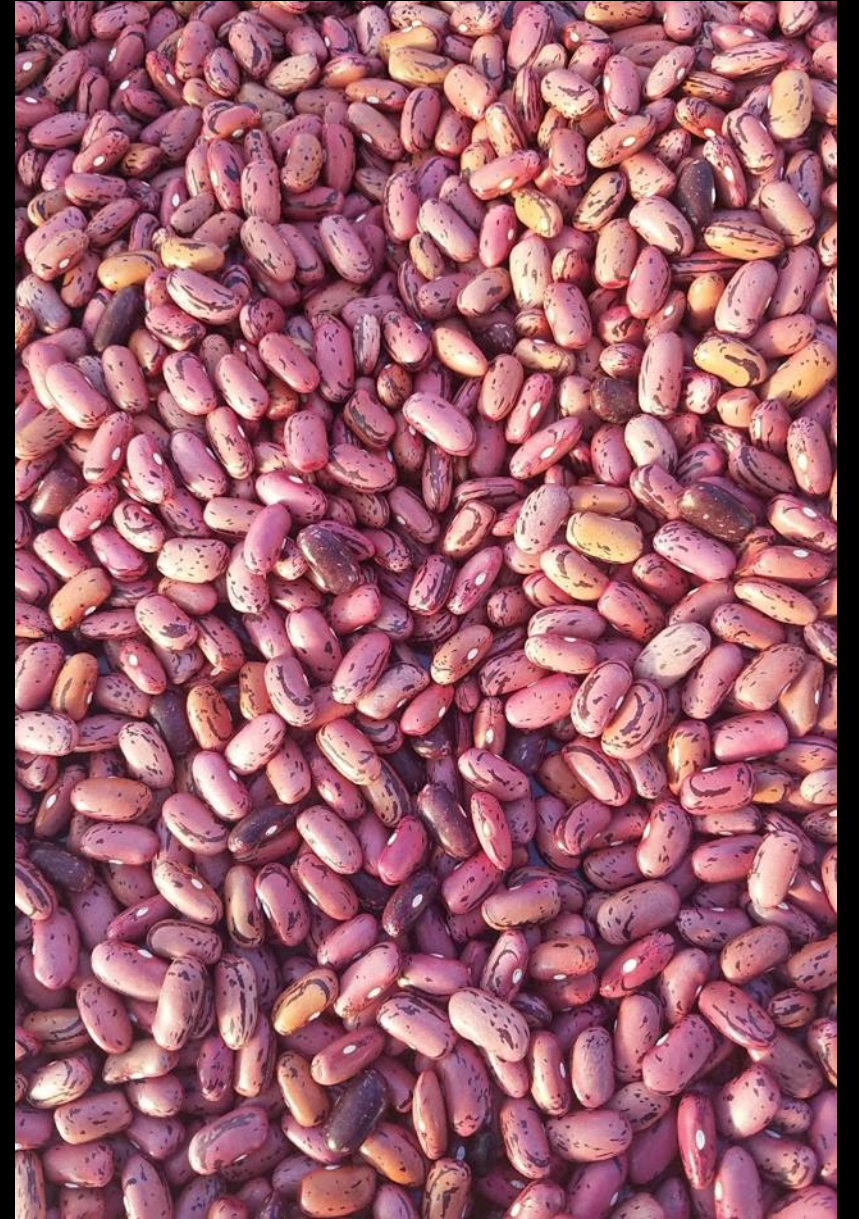
<- BT082 had very low replication, so low confidence in relative performance

Teparies yielded 27% more than common beans, averaged across varieties, though not statistically significant.

Future directions

- SeedLinked variety trials of teparies and common beans
- Continued dry farmed selections of common bean and tepary bean varieties

Sign up here to participate in the 2021 dry farming trials with common beans and teparies:
<https://forms.gle/VnRpCxc39PsnbFEB8>





Thank you!

- Northern Organic Vegetable Improvement Collaborative, Dry Farming Institute sor seed
- Amy Garrett for continued mentorship and support
- Casey Wilson, Mericos Rhodes, Cassandra Waterman, Brad Ramsey, and Matthew Davis for field work and data collection.
- Jim Myers for bean guidance and threshing equipment