

REGIONAL SEED VEGETABLE VARIETY TRIAL – RADISH 2023

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Intro., Educational Application, and Goals | Comparable Traits from Regional and Non-Regional Seed Sources | Assessing Consumer Preference

With a short growing season, unpredictable climatic events, and minimal soils, the Western Slope of Colorado offers many challenges for vegetable growers and consumers alike. Typically, seeds grown in this region are purchased from large companies whose seeds are developed in regions unlike the intermountain west. Regional seed producers often select for traits beneficial to this unique growing environment, however they often lack the resources to study variety performance and consumer preferences. In this study, we observed how radish seeds from both regional and national sources grew based on a variety of metrics.

This internship exposed me to data collection, experimental design, reinforced my critical thinking skills, and introduced me to research-based farming. All are skills I will carry into future academic realms of agriculture. As a student of Environmental and Natural Resource Economics, research involving food systems, resilience to climate change, farm sustainability, and land and water use decisions are highly applicable to my area of study.

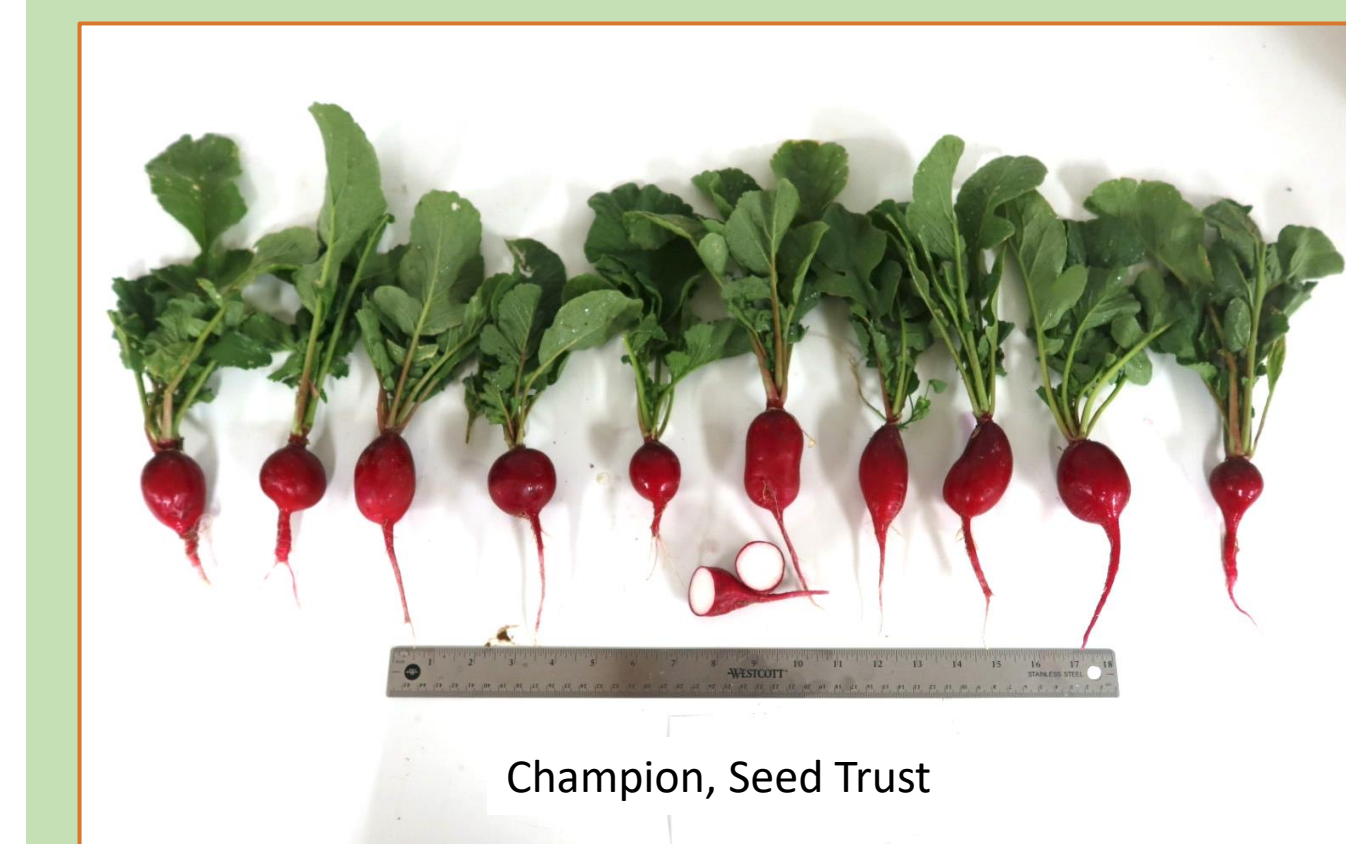


Figure 1: Champion Radishes grown from Seed Trust seeds



Figure 2: Malaga Radishes grown from High Desert Seed seeds



Figure 3: Watermelon Radishes grown from Masa seeds

Champion, Malaga, and Watermelon radishes grown from local seed sources.

Internship Goals:

- ❖ Gain proficiency in vegetable cultivation, planting, and harvest for the summer months.
- ❖ Understand a randomized complete block field design, carry out vegetable variety trials, and understand genetic variability.
- ❖ Exposure to extension and outreach activities, including working with non-profit organizations to educate others on nutrition and gardening.

1) In Field Emergence is Similar Across Varieties

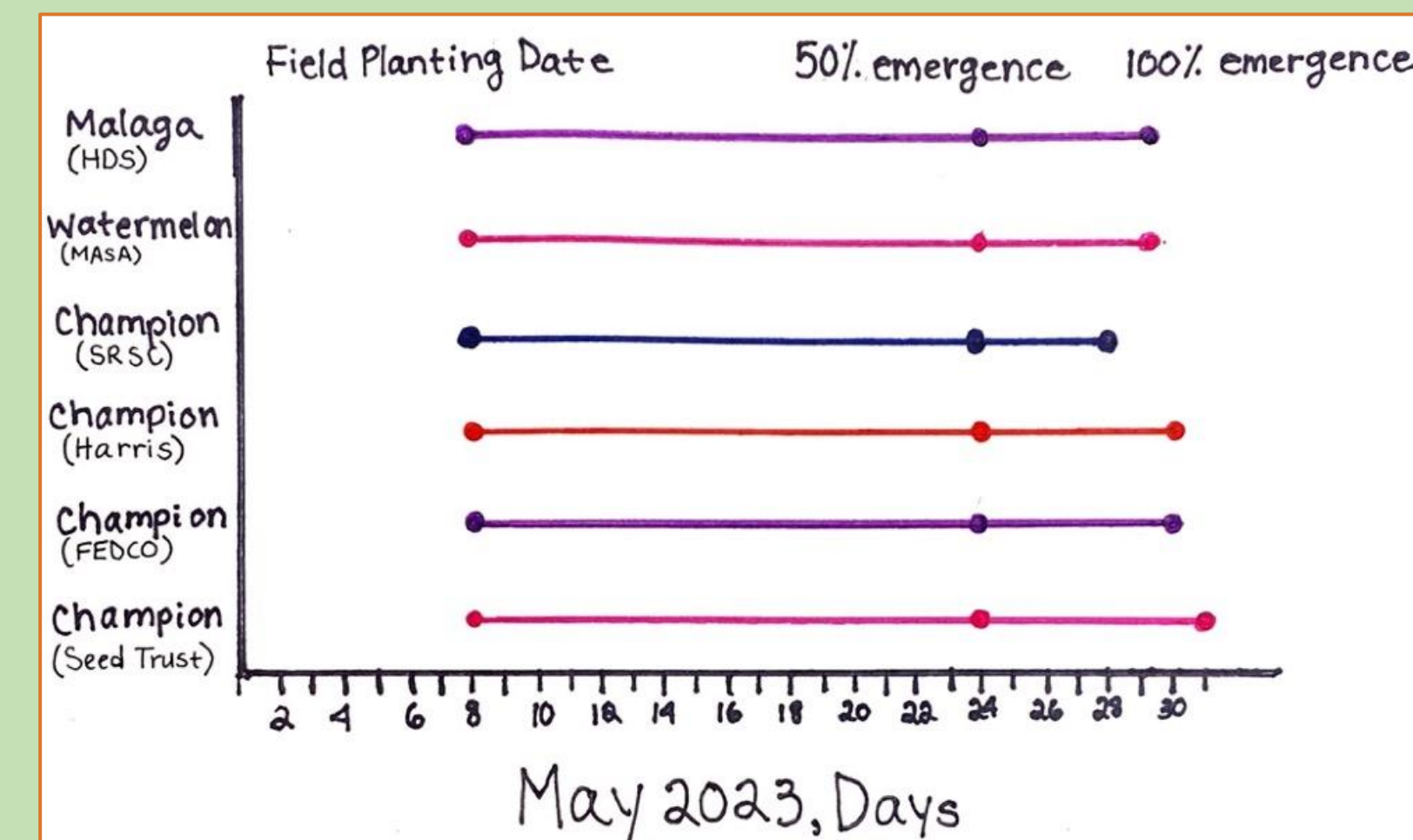
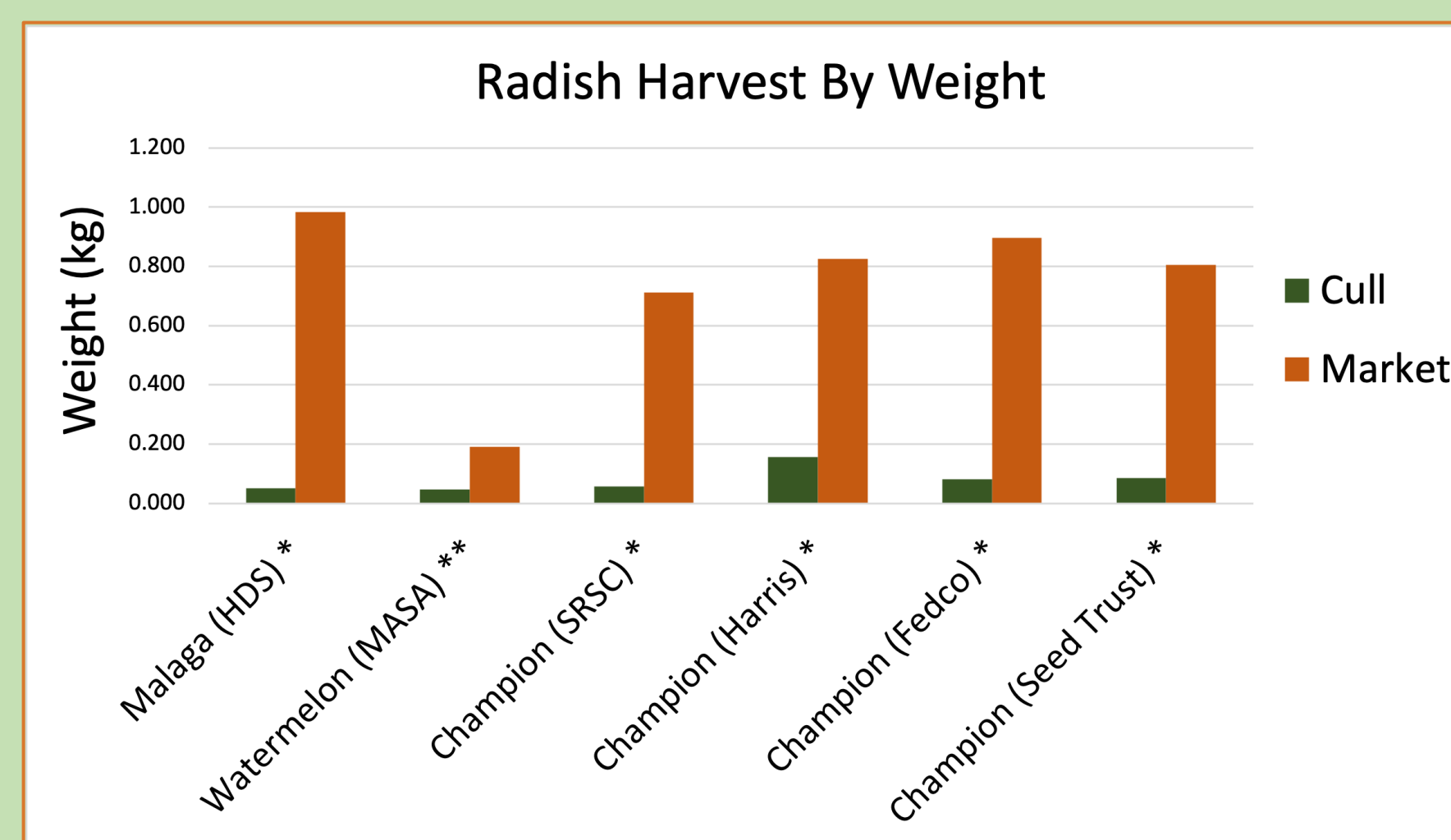


Figure 4: Radish variety emergence data by days. Varieties were planted in plots of 3 rows. 3 successions of each seed was planted. The inner 3 feet of each plot was observed every 2 days upon planting date until 100% emergence was reached. The values above are an average of each succession.

2) Comparison of Yields



The ratio between market yield and cull yield roots are all comparable across varieties except for Watermelon (MASA).

Figure 5: Average harvested weight of each variety separated by cull and market values bar graph. The inner 3 feet were harvested, and successions were combined for each variety. For Figure 5 above and Figures 6 and 7 below, 30 roots had their leaves cut, were weighed and measured as a representative sample for each variety. A One-Way Analysis of Variance, followed by Tukey-Kramer Honest Significant Difference test were used to group varieties. Different asterisk indications show significant difference (P<0.05).

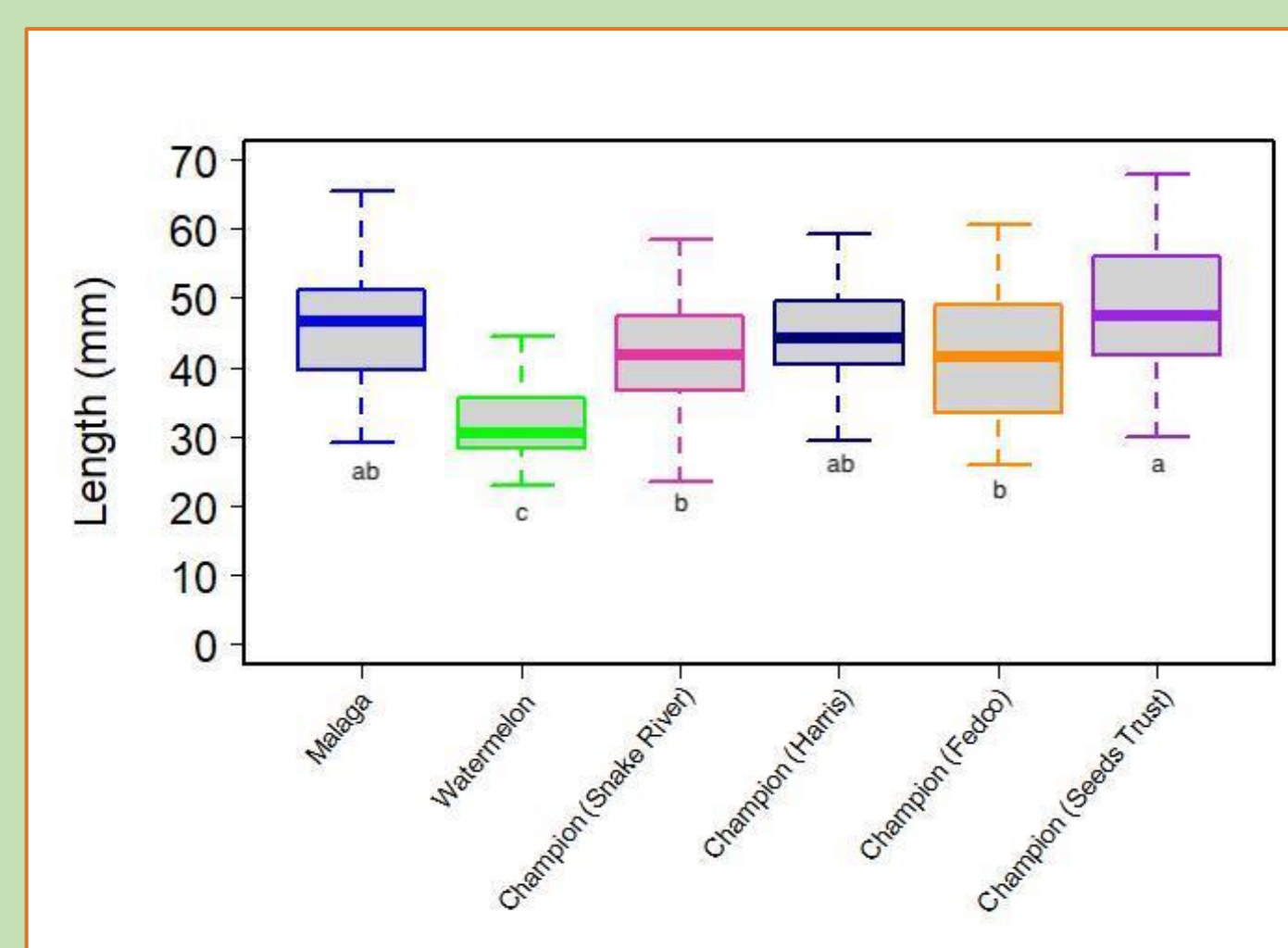


Figure 6: Box plot comparison of length amongst radish varieties. Figures 6 and 7 above generated using One-Way Analysis of Variance, followed by Tukey-Kramer Honest Significant Difference test. Different letter indications show significant difference (P<0.05).

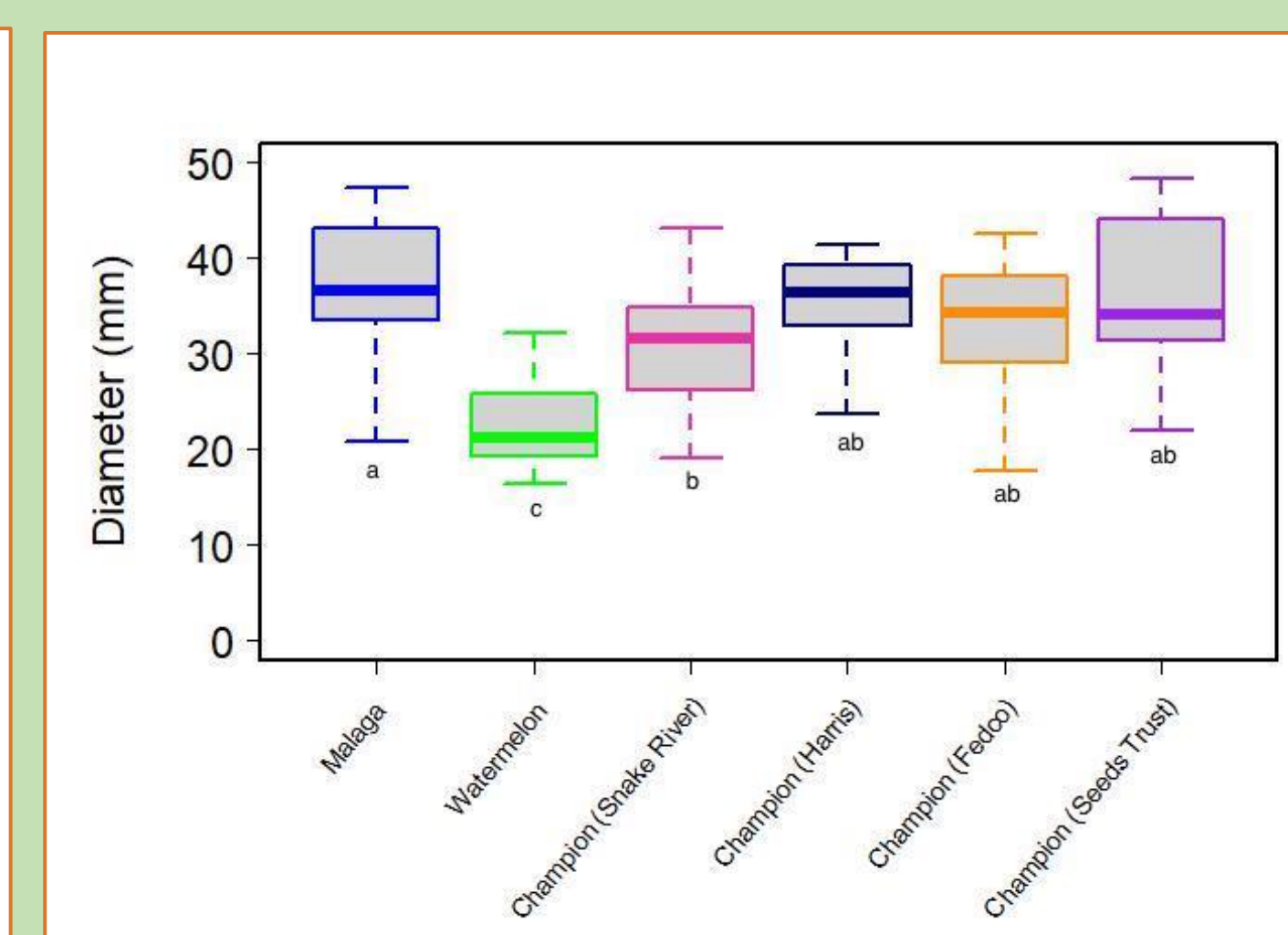


Figure 7: Box plot comparison of diameter amongst radish varieties. Figures 6 and 7 above generated using One-Way Analysis of Variance, followed by Tukey-Kramer Honest Significant Difference test. Different letter indications show significant difference (P<0.05).

4) Arbol Farmers Market Tasting Event



Figure 8: Tasting event table at Arbol Farmer's Market, Paonia CO.

Arbol Farmers Market attendees were asked to taste and vote on each distinct variety of Radish. Participants voted via a 3-tiered system consisting of 'love', 'like', and 'dislike' categories. The results from this tasting event can be seen below. In total, 117 votes were cast.

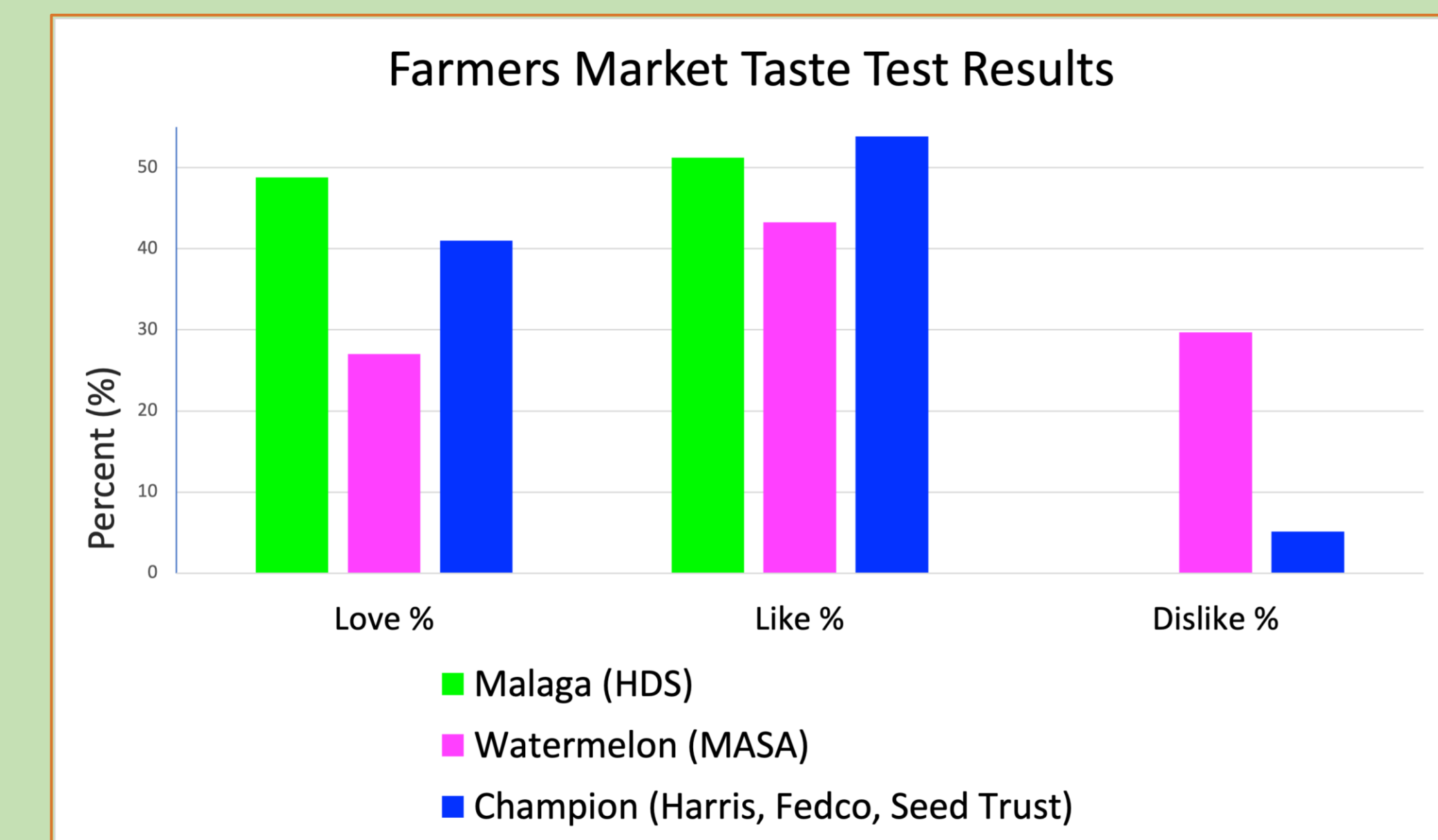


Figure 9: Taste test results bar graph. Results were obtained by asking taste test participants to vote "love", "like", or "dislike" for each variety they tasted using 3 different colored poker chips.

Malaga received the most "love" votes while Watermelon received the most "dislike" votes from the public.

What I learned and Future Steps

From this analysis we can conclude that the varieties grown from regional seed producers - High Desert Seed (HDS), MASA, Seeds Trust, and Snake River Seed Co (SRSC) - were comparable in emergence and ratio of marketable to cull yields to seeds from larger companies in the Intermountain West. Future trials will be necessary to verify these results so that this information can be shared with producers through out Delta County and the Intermountain West. This will ultimately help to strengthen the regional seed economy, promoting farm sustainability and community resilience to climate change.

Emergence was largely consistent across all varieties grown. When a market yield to cull yield ratio was calculated, no variety varied in a statistically significant manner. The Malaga and Champion varieties were mostly comparable to one another in both length and diameter. While the Watermelon variety did vary in a statistically significant manner from others in market quantity (kg), length, and diameter, this variety is typically a fall crop. Additionally, almost all varieties experienced damage from Flea Beetle and the 3rd row planted for all varieties was smaller due to drip tape issues during germination.