



2019 Maui Sweet Onion Variety Trial—Short-Day Late Bulb Onions

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Bulb onions (*Allium cepa* L. var. *cepa*) are one of the top commodities produced in the state of Hawai'i, ranking 19th on Hawai'i's list of the top 20 commodities by value of production at \$2.08 million in 2017 (USDA NASS, 2017). However, bulb onion was also ranked second of the top ten commodities imported by weight in to Hawai'i (HDOA & NASS, 2016). Although onion is one of the state's top commodities this discrepancy demonstrates an opportunity for local onion production to take advantage of the market demand. Growers can increase and improve crop production, including bulb onions, by selecting appropriate varieties based on various characteristics such as disease resistance and yield.

Maui County Extension faculty and the Maui Agricultural Research Center staff conducted a field trial to assess 8 varieties of short-day late onion varieties at the Kula Agricultural Park. Short-day varieties onion varieties are typically planted in Hawai'i to produce mild, or sweet onions. Short-day refers to the 12-13 hours of daylength required to trigger bulbing. The varieties included in this trial were also selected for pink root disease resistance.





Table 1. 2019 Short-Day Late Onion Trial Varieties

Relative Maturity (Earliest to Latest) ↓	Variety	Source	Description
	Francesca	Enza Zaden	Late short-day (LSD), yellow, sweet grano type with medium foliage disease tolerance and pink root resistance (PRR). Lightest skin color, medium bolting tolerance
	61S.10034	Enza Zaden	LSD yellow, similar skin color to Rebecca and similar foliage tolerance but better PRR. Experimental.
	Rebecca	Enza Zaden	LSD yellow, darker skin color than Francesca, better foliage disease tolerance but weaker PRR than Francesca. Round shape, good bolting tolerance
	Fernanda	Enza Zaden	LSD yellow, grano type with skin color in between Francesca/Rebecca. Medium foliage disease tolerance and PRR. Highlight in Hawai'i trials last year.
	Great Western	Sakata	Grower-friendly, main-season yellow, intermediate onion with good pink root tolerance. Good firmness with good skin retention. Good yielding variety with sizes ranging from jumbo to colossal.
	61S.10403	Enza Zaden	Very late short-day (VLSD) yellow, hard globe with darker coloring. Good bolting and foliage tolerance. Medium PRR. Should have excellent storage life for growers holding onions in sheds. Experimental.
	61S.10494	Enza Zaden	VLSD yellow, similar to Camilla but potentially better yield. Experimental. Likely darkest yellow (along with Camilla) in trial.
	Camilla	Enza Zaden	VLSD yellow, darkest yellow in trial. Medium foliage disease tolerance and PRR.

This field trial was designed as a randomized complete block design comprised of four replications and 300 bulbs per replicate per variety were planted. The onions were seeded on March 19, 2019 and transplanted into the field exactly one month later. Approximately 300 pounds of nitrogen was applied as urea (46-0-0), calcium nitrate (15.5-0-0 + 19% calcium), and 20-20-20. Pests and weeds were managed throughout the growing period. All onions were harvested on July 19, 2019, except for 'Great Western' which was harvested one week later.

100 onions per replicate from each variety were randomly selected and weighed to assess yield. Off-grade onions were also determined by size (less than 50 grams), shape, color, splits, doubles, as well as the presence of decay from pink root, fusarium basal plate rot, and bacterial soft rot. Onions were also tested for sugar content using a Brix refractometer using 5 randomly selected bulbs per variety.



The yield results indicate that, on average, ‘Fernanda’ produced statistically heavier bulbs. However, all other varieties yielded similarly with few significant differences (Fig. 1). The Brix results showed no statistically significant differences in sugar content among the onion varieties. The experimental variety E.61S.10403 had the highest Brix among the varieties, numerically speaking (Fig. 2). While the statistical analyses of this short-day late onion variety trial did not provide clear determinations about the best onion varieties in this trial, this information may still be used to guide growers in overall onion variety selection.



