PUNGENCY OF SELECTED ONION VARIETIES BEFORE AND AFTER STORAGE

Clinton C. Shock, Erik B. G. Feibert, and Lamont D. Saunders
Malheur Experiment Station
Oregon State University
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Introduction

The objective of this trial was to evaluate the pungency of five onion varieties commonly grown in the Treasure Valley.

Methods

Varieties for pungency analysis were selected upon recommendation by the seed companies based on their probability of being mild compared to the other varieties (Table 1). 'Vaquero' was included as the industry standard variety of the Treasure Valley. Onion seed company representatives were contacted for input on probable variety pungency.

The onions were grown on a Greenleaf silt loam previously planted to wheat. Onion seed was planted on March 13, 2003. The procedures for growing the onions can be found in the "2003 Onion Variety Trial" report by Shock et al. (2003). The onions were topped and bagged on September 17 and put into storage on October 1. The storage shed was managed to maintain an air temperature of approximately 34°F.

On October 1, 10 bulbs from each of five plots of each of five varieties were sent to Vidalia Labs International (Collins, GA), by UPS ground, for pyruvate analysis. A second sample of 10 bulbs out of storage from each plot of the five varieties was sent to Vidalia Labs on January 16, 2004.

Bulb pyruvic acid content is related to onion pungency with the units of measurement being micro mols pyruvic acid per gram of fresh weight. Onions with low pungency taste sweet, because the sugar can be tasted. Onion bulbs having a pyruvate concentration of 5.5 or less are considered sweet according to Vidalia Labs sweet onion certification specifications.

Results

Varieties 'T-439', 'SX7002 ON', and '6011' had pyruvate concentration low enough to be considered sweet on October 16 (Table 1). 6011 and Vaquero were among the varieties with the highest sugar content. There was a significant increase in pyruvate between October 16, 2003 and January 26, 2004. The pyruvate of all varieties, except 'Harmony', increased significantly between October 16, 2003 and January 26, 2004. On January 26, none of the varieties had pyruvate low enough to be considered sweet.

Averaged over varieties, sugar content decreased slightly between October 16, 2003 and January 26, 2004.

References

Shock, C.C., E.B.G. Feibert, and L.D. Saunders. 2003. 2003 Onion Variety Trials. Malheur Experiment Station Annual Report, Oregon State University Agricultural Experiment Station Special Report 1055:36-44.

Table 1. Pyruvate concentration and estimated sugar concentration of selected onion varieties on October 16, 2003 and on January 26, 2004, Malheur Experiment Station, Ontario, OR.

Date	Company	Variety	Pyruvate concentration	Sugars
			µmoles/g FW	% Brix
October 16, 2003	A. Takii	T-439	4.66	8.08
	Crookham	Harmony	6.08	8.88
	Seedworks	6011	4.90	9.04
	Seminis	Santa Fe	5.66	8.80
	Sunseeds	Ranchero	5.60	8.56
		Vaquero	5.62	9.00
		SX7002 ON	4.70	8.56
	Average		5.32	8.70
January 26, 2004	A. Takii	T-439	7.54	7.56
	Crookham	Harmony	6.40	8.72
	Seedworks	6011	8.12	8.56
	Seminis	Santa Fe	8.22	8.28
	Sunseeds	Ranchero	8.34	8.12
		Vaquero	8.90	8.64
		SX7002 ON	7.84	7.48
	Average		7.91	8.19
Average	A. Takii	T-439	6.10	7.82
	Crookham	Harmony	6.24	8.80
	Seedworks	6011	6.51	8.80
	Seminis	Santa Fe	6.94	8.54
	Sunseeds	Ranchero	6.97	8.34
		Vaquero	7.26	8.82
		SX7002 ON	6.27	8.02
Average			6.61	8.45
LSD (0.05) Date			0.08	0.17
LSD (0.05) Variety			0.56	0.35
LSD (0.05) Date X Variety			0.79	NS