

Heirloom vegetable varieties: a promising future for past treasures?

Ted Radovich

Heirloom vegetable varieties have become elite symbols of flavorful food. The romance associated with these varieties can translate into significant price premiums. For example, large, juicy, misshapen and cracked heirloom tomatoes can cost \$6.99/lb or more at local retailers. They sell, too! However, these varieties often lack the disease tolerance, shipping quality and shelf life that conventional varieties have, so price premiums may just offset crop losses and not necessarily result in increased profits. Also, these varieties lack the hybrid vigor available in commercial varieties of some species (e.g. eggplant and corn). However, it is not all bad news. Direct marketing to local consumers has eliminated some of the challenges associated with postharvest handling. Some Heirloom and Farmer-varieties in Hawaii have good agronomic characteristics ([Fukuda et al., 2008](#)). And, there is increasing interest in including heirlooms in conventional breeding programs to enhance the eating and nutritional quality of commercial vegetable varieties (Rodriguez-Burruezo et al., 2005). Some heirlooms are just plain fun. 'Dill's Atlantic Giant' is an heirloom pumpkin variety that has inspired an industry centered around the competitive growing of giant pumpkins (Figure 1).



Fig 1: Baby Oliver on a strain of 'Dill Atlantic Giant' selected by Ohio grower Nick Welty



Extension agent Jari Sugano evaluates eggplant varieties developed by Hawaii farmers and researchers.

There is no single, clear definition of what an heirloom variety is. It is generally agreed that heirlooms are non-hybrid varieties with a known history of at least 40 years. Some enthusiasts would say only farmer or gardener developed varieties can be considered heirlooms, excluding varieties that were developed by university or commercial breeding programs (Deppe, 2000). Heirloom varieties are desirable for several reasons:

- Gardener varieties have often been intensively selected for high eating quality and attractive (or interesting) appearance.
- Farmer varieties have been selected for adaptability to local conditions.
- The non-hybrid nature of these varieties makes for easy seed saving

Farmer-developed varieties in particular may hold considerable potential for growers in Hawaii. *Kalo* (taro) and *'uala* (sweet potato) served as the foundation of the Hawaiian food system for centuries, providing both greens and starch. Early Hawaiian farmers were astute horticulturists who used

natural genetic variation to develop crop varieties optimally suited for the many microclimates in the islands (Handy et al., 1991). Hawaii's farmers have also played a major role in improving vegetables introduced from Europe, Asia and elsewhere. Many farmer-selected "heirloom" varieties have served as the starting point for CTAHR's vegetable crop improvement program (Gilbert et al., 1969; Table 1).

An interesting example of a Hawaii heirloom is the 'Anahu' tomato, named for Bill Anahu, killed serving as a fighter pilot in World War II. Developed in the 1950s from a cross between a wild tomato species and a cultivated tomato, 'Anahu' has tolerance or resistance to many pests and low nitrogen conditions. 'Anahu' continues to be used as a parent in tomato breeding programs worldwide.

Heirloom and farmer-developed varieties are a celebration of the diversity of vegetables and are reminders of the collective wisdom and creative genius of the food producers who have come before us. They should be neither disregarded, nor over-romanticized. Rather, these varieties should be evaluated, preserved and utilized wherever appropriate. Visit the [UH Seed Program](#) for information on how to order varieties listed in Table 1.

References

- Deppe, C. 2000. Breeding your own vegetable varieties. Chelsea Green Publishing. White River Junction, Vermont.
- Frazier, W.A., K. Kikuta, J.S. McFarlane and J.W. Hendrix. 1947. Tomato Improvement in Hawaii. Hawaii Agricultural Experiment Station Technical Bulliten 136.
- Gilbert, J.C. , J.L. Brewbaker, J.S. Tanaka, J.T. Chinn, R.W. Hartmann, J.A. Crozier, and P.J. Ito. 1969. Vegetable improvement at the Hawaii Agricultural Experiment Station. Hawaii Agricultural Experiment Station Research report 175.
- Gilbert, J.C., J.T. Chinn and J.S. Tanaka. 1970. Four new tropical vegetable-type soybeans with root-knot nematode resistance. Hawaii Agricultural Experiment Station Research report 178.
- Grassbaugh, E.M., E.E. Regnier, M.A. Bennett, L. Bertschinger and J.D. Anderson. 2004. Comparison of organic and inorganic mulches for heirloom tomato production. *Acta Horticulturae* 638:171-176.
- Handy, E.S., E.G. Handy, M.K. Pukui. 1991. Native Hawaiian Planters in Old Hawai'i. Bishop Estate Press, Honolulu, HI.
- Rodriguez-Burruezo, A., J. Prohens, S. Rosello and F. Nuez. 2005. "Heirloom: varieties as sources of variation for the improvement of fruit quality in greenhouse-grown tomatoes. *Journal of Horticultural Science and Biotechnology* 80: 453-460.
- Takeda, K and R. Hamasaki. 1996. Koba Green Onion. *Journal of Hawaiian and Pacific Agriculture* 6:49-50.
- Takeda, K, J. Tanaka, T. Sekioka and J. Hamilton. 1996. 'Kaala' and 'Waialua' peppers. *HortScience* 34:1051.
- Tanaka, J. 1960. Awahia: a new pungent soybean for Hawaii. *Hawaii Farm Science* 9:1-2.



'Waianae' mustard being evaluated at the Waimanalo Experiment Station.

Table 1. Select non-hybrid, heirloom and farmer developed vegetable varieties available from the [UH Seed Program](#) (CTAHR). This list is not comprehensive. Please visit their website for a complete list. Other varieties and in-bred lines are maintained and made available by [Hawaii Foundation Seed](#) (CTAHR).

Species	Variety	Approximate date released	Description/Background
Tomato	'Anahu'	1955	Medium sized salad tomato, developed for disease resistance and named after Bill Anahu by the Kamehameha graduate's former teacher, UH breeder Dr. Jim Gilbert. The WWII fighter pilot was killed in action during the war.
	'Kewalo'	1974	Selected from 'Anahu' for earliness and flavor.
Lettuce	'Manoa'	1969	A Hawaiian selection of 'Green Minionette.'
	'Anuenue'	1952	Selected for resistance to tipburn and heat.
Eggplant	'Nitta'	1968	Named for farmer James Nitta who developed it. Vigorous, widely grown.
	'Molokai'	1968	Farmer variety from Molokai.
	'Waimanalo Long'	1978	A UH selection from 'Molokai'
Kai choi	'Waianae'	1968	A heat tolerant selection of locally grown mustard cabbage.
	'Hirayama'	2000	White rust tolerant, heading type, named for the grower who selected it.
Basil	'UH'	1995	Fusarium resistant, fragrant 'Genovese' type.
Pepper	'Waialua'	1996	Light green, bacterial wilt resistant jalapeno-type. Approximately 25,000 Scoville heat units (SHU).
	'Ka'ala'	1998	Small, 3-lobed bell pepper for the home garden.
	'Hawaiian'	--	Traditional local variety of <i>C. frutescens</i> . Fruits are very hot, ~200,000 SHU.
Onion	'Koba'	1995	Green onion (<i>A. fistulosum</i>) originally from China, named for grower who preserved the variety. Popular commercial variety.
	'Awahia'	1960	Pungent, light purple onion developed for Hawaii conditions to retain flavor after cooking. Selected from 'Red Creole.'
Corn	'Supersweet #9'	1977	Popular open-pollinated, disease resistant tropical sweetcorn (Yellow).
Beans and Pea	'Poamoho'	1980	A more tender, stringless selection of 'Manoa Wonder.'
	'Manoa Wonder'	1969	A flat podded pole-bean, nematode resistant, derived from 'Lualualei.'
	'Manoa Sugar'	1957	Edible podded Chinese pea, has heat and disease (incl. powdery mildew) resistance.
	'Kahala'	1968	Edamame soybean selected for good flavor, nematode resistant.