

Report to the 2018 Saratoga Horticultural Research Endowment

Project Title: The Ruth Bancroft Garden 2018-2019 Aloe Hybrid Breeding Project

Co-Principal Investigators:

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Date:

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Re:

The Ruth Bancroft Garden- 2018-2019 Aloe Hybrid Breeding Project
Report to the Saratoga Horticultural Research Endowment

Location of Project: The Ruth Bancroft Garden

Aloe hybrids under experiment, featured in recent pictures attached to this report, now planted in three different test plot Garden locations.

1. x Gasteraloe 'luman': produces rosettes to 1' in diameter; is a stemless clumper, with spotted leaves that take on a pink, orange and reddish tinge in summer; orange tubular flowers on a branch stock.
2. Aloe buhrii x reynoldsii, pictured below: produces rosettes to 18" in diameter; is a stemless clumper with wide choral edged leaves; much branched flower stalk to 18" high with yellow-orange flowers.
3. Aloe pearsonii x mitriformis pictured below: either upright or horizontal growth clumper with stems of stacked triangular shaped leaves, becoming purple-flushed in sun; red flowers in a round cluster in summer.
4. Aloe zubb x squarrosa, pictured below: clumper with curled-back, light green heavily spotted leaves; flower stalk is branched with yellow-orange flowers.
5. Aloe 'Rubin', picture below: a relatively compact hybrid with four species in its parentage: Aloe humilis and Aloe brevifolia from South Africa, Aloe zubb from Sudan, and Aloe squarrosa from Socatra. It forms mounded clusters of six inch and heads with short spotted triangular leaves. In

shade plants are green, but in sunnier positions they become purple-tinged. Flowers not known.

Outline of the proposed research and/or education project-and report of progress.

Year One is the planting and trial, and the education of the public on the experiment through signage, brochure, and website. This year also includes reporting on the hybrids' success in their stressful microclimates, as well as building a relationship with the tissue culture laboratory which will be chosen for the mass development of the best performing hybrids. At the end of this year patents for the best performers will be applied for, if funds allow.

Year Two will be placing the plants into in vitro tissue culture, and reporting out to the horticultural community on the results of the trial. Year Two will also be a time for marketing the hybrids special characteristics and telling the story of their responses to climate and stressful conditions. Marketing the new plants is done through articles, website, social media, public speaking, and collaborative work with industry professionals.

This will also be a year of developing relationships with the nurseries which will be used to grow the plants in mass production.

Years Three and Four will be placing the tissue cultured specimens into nursery culture to produce product ready to be sold. Marketing the expected new hybrids will continue at TRBG. By end of Year Four enough plants will be produced to start selling to the public.

Project Timeline and report on completed activity through early January 2019. The project did not get going until August, since the form for completion of filing for funding of the project was not received until mid-July.

Month	Activity
August, 2018	Selected Garden test sites Prepared sites, order soil tests; create soil consistency; install high-low thermometers; plant hybrids; hand irrigate test sites; design signage; draft informational brochure
August, 2018	Selected Garden test sites: 1. Overhead canopy with relative constant bright exposure, little wind. 2. Site under a tall plant and tree, giving partial shade and full afternoon sun, some wind exposure 3. No overhead shade, windy exposure Two sites had soil tested previously. One site soil to be sent for testing. Prepared sites, created soil consistency; purchased and installed high-low thermometers; planted hybrids; hand irrigate test sites; used shade cloth on newly planted plants; Designed signage; drafted informational brochure.

	Began bi-monthly monitoring of temperatures; hand irrigated test sites; produced signage; Got brochure designed and printed. Posted information on TRBG website.
Sept. 2018- November, 2018	Monitored hybrids in bi- monthly; hand irrigated sites, noted water use and reactions to temperature and wind; installed signage; photographed plants monthly. Discussed Hybrid Project brochures with interested visitors and on docent led tours.
December- 2018	Ordered soil test for 3 rd site. Monitored hybrids for reactions to rain, wind and temperature during late November rains and December and early January cold. Plants doing well in all locations with temps down to 29 degrees Fahrenheit. Soil analysis received back for portions of beds where new soil was added. Report will be disseminated until January 2019. Principal Kemble will be exploring tissue culture sources with Randy Baldwin and San Marcos Growers in January.

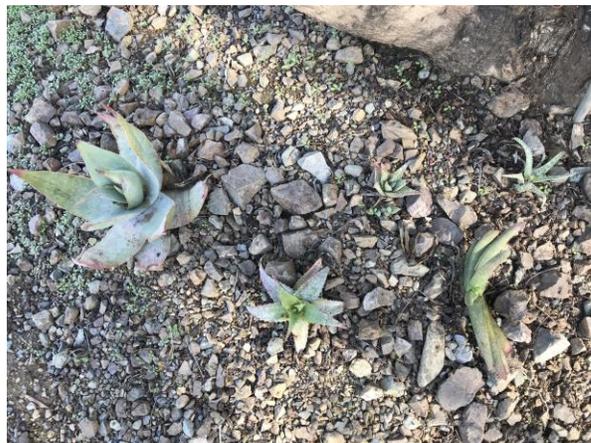
12-28-18 Aloe test plot, bed B



12-28-18 Aloe test plot, Bed N



12-28-18 Aloe test plot, E. Fence



Brian Kemble reports that the hybrids are weathering their varying exposures in the three sites well so far. They have identified 3 different sources for tissue culturing which they will investigate in the next two months. The sources are Magnolia Garden, Rancho Tissue in San Diego, and Hans Hansen, a breeder in Michigan.

One obstacle to the trial's success is how slowly the plants are growing, which could mean that it may take more than one year to fairly assess them. The arrival of spring might help, since they did not get them planted until August, and the plants didn't really get rooted in well until the winter arrived.

Another obstacle to the project's success might be if we don't get any cold weather to speak of this winter. Testing for cold tolerance is an important aspect of determining the suitability of the plants. But after the first of the year we got some nights below freezing, so perhaps this will resolve itself.