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New Crop Report

Hort 5051

Dudleya brittonii

Taxonomy:

Dudleya brittoni, a herbaceous perennial, that is also a succulent, belongs to the family Crassulaceae also known as the stonecrop family. Its common names consist of the Silver Dollar Plant and Giant Chalk Dudleya. To the best of our knowledge there are no know synonyms for this particular species (Jacobsen 1974).

Geographic Distribution:

The geographical distribution of *Dudleya brittonii* is predominantly located in the southwest corner of the United States and northwest part of Mexico, and native to Baja California, Mexico in between Tijuana and Ensenada on Isla Todos Santo (San Marcos, 2013). The native location of this plant species is approximately 30 - 33 degrees N lat., but the specific coordinates of *Dudleya brittonii* were not found. Typically found of steep bluffs in maritime costal scrub at an altitude around sea level to a couple hundred feet above, preferring slanted slops and rocky soil (Bornstein 2005). To the best of my knowledge no published information exists on whether or not this plant is invasive or will become invasive in any part of the

world. This may be because the general climatic conditions consist of fairly wet winters and extremely dry summers.

Native Habitat:

Dudleya brittoniis, in its native habitat, can be found along side the pacific coasts of Baja California, Mexico; in Rocky cliffs, steep bluffs in maritime costal scrub, volcanic rock and other extremely porous soils (San Marcos 2013). It grows extremely well in sun to partial shade; the quality of light significantly outweighs the quantity of light due to its tendencies to etiolate (Stein 2011).

Taxonomic Description:

Dudleya brittonii gets to be as big as 6-18" wide with a wide solitary rosette form, and about the same in height. The color is green with a whitish coating from the cuticle that provides the plant with protection from the sun (Bornstein 2005). To my knowledge there was no published information about their root system type, however they do have a underground storage organ which is a corm. In the summer however, their roots are unable to absorb the water so this excess of water simply rots them because of their dormant state (Stein 2011). Their leaves are a different story with 1-2" wide lanceolated form, on the surface of the leaves is a white farinose powder, 3.5-8.5cm across and 4-11mm thick (Jacobsen 1974). It flowers in late winter or spring reaching up to two feet tall, the stem covered thick in dead leaves. The flower itself is a dull yellow, but the stalk of the flower is a magnificent pinkish-red (Stein 2011). To the best of my knowledge no published information exists on the uses by indigenous people, but some people believe that it is resistant to deer, and they plain just don't like it.

Name and Description of Varieties/Cultivars on the market:

As of this moment there are two known cultivated "forms" for *Dudleya brittonii,* namely related species: *D. canidia spp. brittonii* and *D. viridis*. Both of these different species are pale green in color instead of the chalky white. The flowers remain the same as in *Dudleya brittonii* (Low 2008).

Propagation Method:

In addition, *Dudleya brittonii* has been found to be propagated through both seed and vegetative, although vegetative propagation is not only more popular but it is much easier to do. The vegetative propagation process needs to be done in the spring with temperatures reaching 21 degrees C. First, start with cutting a leaf at the very base of the stem and then let it sit and dry for about five to ten days. An optional but advisable method is to dip the cutting in talc before placing the stem into a 4 inch pot with 2 parts perlite and 1 part cactus potting mix. After finishing this you then place the pot in a warm, sheltered, but very bright filtered light area with no direct sunlight, you do not want the leaves to dehydrate. During the rooting period make sure to limit water, the rooting will take around 2 weeks, after roots transplant into the container for purchase, and in 4 to 6 weeks it's ready for sales containers (Leon 2011). One thing to remember when rooting cuttings, overhead watering is not good for it, apply only to the soil line.

Although not as popular and much harder to do, seed propagation is still possible for this succulent species. For this experiment 288 seeds were sown on week 7. Proceed to place seeds into a 288-cell plug tray, consisting of 3 parts sand and 1 part LC8 potting mix. The seeds do not need to be covered but do need a

moistened soil for germination. Placing them into a mist house at an optimal 20-21 degrees Celsius with sufficient lighting resulting in germination. In just two weeks 280 out 288, or 97% of the seeds sown had germinated. The following week, week 10, the 288-cell plug tray should be pulled out and placed on capillary mats in the same conditions of 20-21 degrees Celsius and quality lighting. Next, on week 14, after the roots had developed, the plants were transplanted on April 10,into 36 4" containers. Half of those containers were transplanted into the original combination of 3 parts perlite and 1 part LC 8 mix. The other half were placed in strictly LC-8 potting mix to see what affect moisture had on *Duleya brittonii.* Limiting water after transplanting also helps the development of the plant and although the results are not known for the moisture test, it will be a good indication to how the plant survives. Unfortunately 0% of the sown seeds flowered, and may be due to the fact they were sown to late in the season and did not have time to mature. Ultimately expect your seeds to germinate at a 97% rate in about 2 weeks time and ready for transplanting in 7 weeks after being sown.

Product Specification:

The ideal phenotype that a marketable cultivar might posses, somewhat depends on what region you are in. For people in colder climates, a plant that is winter hardy would be ideal. However, that is most likely impossible, so creating a plant that with stands insufficient lighting through a window indoors would be significant in the market place. Other phenotypes might include a variety that can with stand overhead watering, this case when placed in climates with excessive rain.

Market Niche:

Dudleya brittoniis target to sales date should be around week 17, either late April to early May. With flowering being earlier in the spring time consumers might want this in their rock gardens. However, some consumers like this plant strictly for its foliage, and because it is highly drought tolerant is makes for a good sale anytime throughout the summer. Given this plant is used for mostly a foliage crop it wouldn't be necessarily economical to try and force this plant year round but may be important if you want to compete with other crops in the same market place. These crops may include other Crassulaceae, other succulents, cacti, and or other foliage plants that are significantly drought tolerant.

To this day, *Dudleya brittonii* is the most popular in the genus. This being said it has the chance of being a new major crop. For one, it is already identifiable by consumers and is being sold in nursery stores in hotter and drier climates. Also, with the increase in interest in succulents in cacti and succulents it's only a matter of one to two years before this product could be ready, and possible used as an annual for colder climates. However, some problems or limitations strike me as cautionary. First, consumers would need to be educated about the water habits need for this plant in the summer months, simple over watering can cause rot, mealy bugs, and death. Other limitation might involve winter hardiness, etiolating of leaves, and some other minor factors. All and all these are just minor limitations and should be no hurdle to stop consumers from buying the crop.

Anticipated Cultural Requirements:

Dudleya brittonii is hardy in USDA Zoned 9-12, the plant is highly heat and drought tolerant during the summer months and prefers moist cool winters (Stein

2011). It prefers sun to part shade but can handle full sun when on the coast, otherwise while inland place plant in sun to part shade. The quality of light is much more important than the quantity, the plants contain farinose powder which makes them really effective for ultraviolet reflectivity. Low light situations might be stressful and create a susceptibility to mealy bug infestation (Stein 2011). Place plant in a 288-cell plug trey and transplant into a 4," very well drained soil container, does not need excessive watering. In fact most, if not all, of the plant is dormant through the summer months and over watering can result in mealy bugs or fungal rot (Stein 2011). To the best of my knowledge, no published information exists on the use of plant growth regulators, fungicides, and insecticides. This does not seem to be a problem as all of the plants in the *Dudleya* genus are known to live up to 100 years (Bornstein 2005).

Production Schedule (from seed):

Seeds should be sown in week 7 into 288-cell plug trays. The germination will take approximately 7-14 days and should not be transplanted until week 14 or until roots are fully established. When ready for transplanting, transplant into 4" well drained containers with limited watering. As for applications, no treatment is required for *D. brittonii* and should be ready for sale by the first of May. The experiment did not produce flowers, but because this product is mainly sold as a foliage plant the production of the crop was successful.

Needs Assessment for Genetic Improvement:

The only concern of genetic improvement that needs to be in place for *Dudleya brittonii* could possibly be one without a flower, or a flower that is showier.

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