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New Crop Report
HORT 5051

Delosperma floribunda 'Stardust' New Crop Report

Taxonomy:

Delosperma floribunda 'Stardust' is an herbaceous perennial in USDA zones 6-8, however it has been shown to be marginally hardy as far north as zone 4a to as far south as zone 10. The name is derived from the Greek word *delos*, meaning visible, and *sperma*, meaning seed, which clearly defines the structure of this genus (CITE). Delosperma spp. have seed capsules that have no membranous covering and clearly reveal the seed beneath. (Still, 1994). The Delosperma genus is categorized under the Azioaceae family, formerly known as the Mesembryanthemaceae family. This family is composed 135 genera, which are native to southern Africa and known for their succulent evergreen leaves and distinct flowering habit. The Delosperma genus is commonly called Ice plant due to calcium crystals that build up on their leaf surfaces resembling the appearance of ice. Although specific information was unavailable, it appears as though *Delosperma floribunda* 'Stardust' is a cultivar derived from the native species *Delosperma floribundum* (Tropicos website database).

Geographic Distribution:

Delosperma floribundum L. Bolus originally comes from the eastern cape region of South Africa near Cradock county at the coordinates 32.2133°S, 25.6833°E (http://data.gbif.org/occurrences/287284244/). This species was first identified and named by Harriet Margaret Louisa Bolus, a famous South African botanist (CITE PlantzAfrica). The entire

Delosperma genus is a relatively new to the United States since first being introduced in the early 1980's. However the greatest interest in this genus came with the more recent work of Panayoti Kelaidis of the Denver Botanic Garden starting in 1994. As Apartied ended in South Africa the borders opened up again and researchers could continue research on this intriguing genus. Kelaidis first observed the Delosperma spp. growing in the Drakensberg Mountains and realized it's true potential hardiness (Kelaidis, 2006. Although many Delosperma spp. can now be purchased in nurseries spanning from Alaska to Florida, currently the USDA Plants Database states that Delosperma spp. can only be found in the southern 6 counties of California (USDA Plants Database).

Native Habitat:

In its native habitat, *Delosperma floribundum* is generally found in disturbed sandy sites and is known for being incredibly drought tolerant. According to Plantz Africa, this species is typically found in grassland regions but typically on the rocky margins of the landscape where it won't be outcompete by grass. Most Delosperma spp can be found in habitats include spots with shallow, poor soils or rock crevices where temperatures are often high. Rainfall above 300 mm is critical for survival of the plants and only two species are found in the more arid areas of southern Africa. (PlantzAfrica). Almost all habitats from seashore to forest are colonized, making it an excellent garden plant as there are species for almost every garden niche. Altitude varies from sea level to the highest mountain peaks, with particular species richness in the Eastern Cape. Adaptations by members of this genus include leaf succulence, which helps to retain water in times of drought. Thick roots are found in species that inhabit areas frequently burned, enabling them to survive fire. Although it has a spreading, groundcover habit, this

species has not proven to be invasive in any native or introduced site. However, there is potential for this to change as concern rises over another species becoming invasive in the same genus, *Delosperma cooperi (Cite)* .

Taxonomic Description:

Iris domestica is an herbaceous monocot with an erect habit. When mature it usually reaches between 2 and 3 feet in height, but flower stalks can reach as high as 4 feet in wet soils and will require staking at this height. Leaves are sword-like and overlapping, giving the appearance of a fan. They are usually about 1 inch wide and up to 10 inches long. Flower stalks carry multiple blooms. Flowers have 6 petals, are 2-3 inches across, and star shaped, similar to a lily. Wild type flowers are usually orange with darker spots. Flowers will bloom in early to mid-summer, usually the second year from seed. Fruit is a cluster of shiny, black seeds that resembles a blackberry and gives the plant its common name. Seeds are set in late summer to early fall and persist for several weeks. It uses rhizomes as underground storage structures, and can be used for propagation (Still, 1994). The rhizome has been used in Traditional Chinese Medicine for hundreds of years in the treatment of upper respiratory problems (Georgetown University Medical Center).

Ecology and distribution

South. Afr.

Biol./Eco : biology: perennial- Dwarf shrub, Succulent Ht up to 0.25 m. Alt: 800 - 1920 m.
Distribution: FS, KN

Bibliography for Southern Africa :

- Aloe 40[3&4]: 94 (2003).

Name and Description of Varieties/Cultivars on the Market:

Iris domestica has one cultivar, 'Freckle Face' which is shorter than the wild type plant and has pale orange flowers. A related species, *Belamcanda flabellata*, also has a cultivar called 'Hello Yellow' which has unspotted yellow flowers (Still, 1994). 'Hello Yellow' was also studied in this project as a comparison cultivar.

Propagation Methods:

To date there is no mention of vegetative propagation of *Iris domestica*. Seed propagation was the subject of experimentation for this project.

I started with 78 wild type seeds of *Iris domestica* and approximately 80 seeds of *B. flabellata* 'Hello Yellow.' Since there was information available on the germination requirements of *Iris domestica*, I divided the seeds into two treatments and sowed them in two 128 plug trays. One treatment was to be a control group of 39 *I. domestica* seeds and 40 *B. flabellata* seeds. They would be placed in a mist house at approximately 70°F until germination. For the second treatment I used the germination recommendations for *B. flabellata* given by the seed company. The recommendation was to sow the seeds and keep warm (70° F) for 2-4 weeks then give seeded tray in a cold treatment (40° F) for 2-4 weeks (Jelitto).

However, by the second week from sowing, before the cold treatment, the *I. Domestica* seeds had started germinating. By the third week from sowing the *I. Domestica* seeds had reached 88.5% germination. By this time only 1 of the *B. flabellata* seeds had germinated, so I went ahead and carried out the planned 2 week cold treatment, hoping it might act as vernalization for the *I. domestica* seedlings and possibly result in forced flowering.

The germinated control seedlings were taken out of the mist house and placed on capillary mats, as were those from the cold treatment group after the treatment was concluded. There was still no further germination from the *B. flabellata* seeds in either group, the one that had germinated died.

8 weeks from sowing, there were no changes to speak of. There was no germination of *B. flabellata* seeds and the trays were discarded. The *I. domestica* plugs were transplanted into 4 inch pots. Yield potential was 98.5%. Zero plants were in flower or had reached visible bud date by the conclusion of the experiment.

In conclusion, *Iris domestica* will germinate in 14-21 days under warm (70°F) conditions.

Product Specification:

The ideal form of a marketable variety of *Iris domestica* is an erect plant about 3 feet high with multiple flowers per stalk. An ideal variety would have less of a tendency to grow too tall in wet soil conditions.

Market Niche:

The target sales date for this plant as a perennial landscape plant would be throughout the summer, but particularly early summer starting in May. Since it is an early summer flowering plant, sales could be targeted around Mother's Day. *Iris domestica* also has some cultural interest as it is said that Thomas Jefferson grew it in his garden at Monticello. It will compete with other summer flowering perennials including other Irises, and Lilies. *Iris domestica* is already sold in limited availability as a packet seed crop. So some consumers are already familiar with it.

Iris domestica also has potential as a cut flower. It has long flower stalks that are prized in the floral industry. The dried fruit could also be used in floral arrangements.

Iris domestica has potential to be forced year-round, but more research needs to be done on flowering requirements. However, once all these cultural requirements are worked out, *Iris domestica* has potential to become a major crop. It may not be the next big thing just because there are already similar plants available, but it is an interesting crop with many good features going for it.

It could be ready for market sale in one-two years, as soon as flowering requirements are known.

Anticipated Cultural Requirements:

Iris domestica is already hardy in USDA zones 5-10, but possibly hardy to zone 4 if in a sheltered area with sufficient cover. It is drought tolerant and does best in 70-85°F. It requires well drained soil, and prefers neutral pH. *Iris domestica* will perform well in low nutrient soil. Rhizomes are susceptible to Iris Borer, so insecticides may be necessary (Still, 1994).

In greenhouse production seeds should be sown in 128 plug trays and transplanted into 4 inch pots. Growth regulators are probably not necessary.

Production Schedule (From Seed):

Seeds should be sown in week 7. Germination will take 2-3 weeks, and plants will remain in the plug stage for approximately 5 weeks after germination. At this point plants can be transplanted into 4 inch pots and put under long day conditions for sale in mid-May.

There is currently no research on forcing *Iris domestica*. More experimentation needs to be done on vernalization and other flowering requirements in order to achieve flower bud

initiation in less than 1 year from sowing. With current information it is not economically feasible for greenhouse production to flowering.

Needs Assessment For Genetic Improvement:

A possible area for genetic improvement is shortening the germination time. Work should also be done on raising the germination percentage.

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