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## *xDisphyllum* ‘Sunburn’

In March 2012, I released a new Australian hybrid succulent plant of distinction; bred under a harsh summer sun, it is a plant truly symbolic of Australia - green and gold, which I have named *xDisphyllum* ‘Sunburn’.

A luxuriant green, relatively compact, groundcover succulent which flowers readily and heavily throughout most of the year, *xDisphyllum* ‘Sunburn’ has beautiful golden, yellow/orange flowers, 50+ mm in diameter.

Years of research and breeding with Australian native succulents has led to the creation of this intergeneric hybrid. The seed parent was *Disphyma crassifolium* ssp. *clavellatum*, an Australian native, which has distinctly pink, pink/white or, rarely, white flowers, and the pollen parent was *Glottiphyllum longum*, a native of South Africa, which has large yellow flowers.



*xDisphyllum* ‘Sunburn’ in garden trials showing its flowering abundance and neat, compact, spreading habit, in full sun – Photo: Michele Kapitany.

Before providing more details about this new cultivar, a word or two about its parents.

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***Disphyma crassifolium* ssp. *clavellatum* Aizoaceae****Common names**

Round Leaf Pigface, Rounded Noon-flower

**Description**

An Australian native, prostrate, perennial creeper; its stems are always in close contact with the ground and root freely at each stem node. The mostly upright leaves, to approximately 10-70 mm in length, are cylindrical in cross-section and usually have rounded leaf tips. However, *D. crassifolium* ssp. *clavellatum* can be quite variable. Some plants have slightly angular leaf margins and pointed tips, notably in Tasmania, while inland plants have large, robust leaves and flowers, especially in the north-west of its range. These features are stable and are retained in cultivation.



*Disphyma crassifolium* ssp. *clavellatum* varies markedly over its distribution range. On the southeast of the continent, this species has weak flowers with sparse petals and, mostly, pale pink colour. The example pictured above (Photo: Michele Kapitany), from Wongan Hills, Western Australia, has exceptionally large vivid flowers to 5 cm in diameter; note the defined white centre, which is lacking in the image of the same species on page 10, also from Western Australia.

Future research in relation to this variability may warrant further divisions of this subspecies.

#### **Habitat and distribution**

Found along the coast and inland, in or near saline soils and exposed, rocky areas. Endemic to the southern half of mainland Australia and Tasmania; also found on neighbouring islands.



*Gunniopsis glabra*, alongside a flowering *Disphyma crassifolium* ssp. *clavellatum*, near Kalgoorlie, Western Australia – Photo: Michele Kapitany.

#### **Cultivation**

The Australian *Disphyma* stands apart from other succulents. Its known closest relatives are two other Australian genera – *Carpobrotus*, of which there are numerous species and *Sarcozona*, which has two known species. All three Australian genera, *Carpobrotus*, *Disphyma* and *Sarcozona*, are in the same family, Aizoaceae (formerly Mesembryanthemaceae). It may be said by the public who come across plants of all three genera that they are the same, or at least similar, in appearance. All three have spreading stems, are relatively short and close to the ground, with superficially similar vegetation and have pink/purple flowers, primarily in spring, and are commonly referred to as *Pigface*.

Therefore, a quick look at one major difference may be worthwhile. *Carpobrotus* and *Sarcozona* both have large, sweet, edible fruit; *Disphyma* does not. Can you imagine if an inexperienced person tried the wrong one? What if the inedible fruit was not palatable or was even poisonous? So you need to know one from the other.

Without further comparing edible, visual or other taxonomic differences, of which there are many, it may be important for the benefit of this article to compare their habitat differences, as they can be very distinct. The distribution range for all three genera overlaps frequently. It can be very common to find plants of *Disphyma* growing near or alongside *Carpobrotus* or *Sarcozona*.



*Disphyma crassifolium* ssp. *clavellatum* growing in degraded farmland where salt is rising – Photo: Michele Kapitany.

*Disphyma* survive and grow well where few other plants can; in fact the immediate area around the plant pictured above has greatly reduced salt levels due to the *Disphyma*'s presence. What can we infer from this?

While *Disphyma*, *Carpobrotus* and *Sarcozona* can all be flowering at the same time, hybrids, at least between *Disphyma* and the other two genera, seem not

to occur in nature. I have visited and researched hundreds of locations where members of the Aizoaceae grow naturally in Australia. Where distribution ranges overlap, it is an ideal opportunity to compare plants growing almost side by side, primarily along or near saline lakes, saline flood plains and claypan margins. A major difference in soil preference immediately becomes apparent. *Disphyma* being the closest to the water's edge where minor inundation from flooding can be regular and occasionally severe and long lasting. *Disphyma* shows a very high tolerance of salt (halophytic). Both *Sarcozona* and *Carpobrotus* are almost always found a greater distance from the water's edge, usually at a slightly higher elevation and also predominantly in deeper, more sandy soil.

What all this means to the home gardener is that *Disphyma* prefers, or can grow in, totally different soils to *Carpobrotus*. So, if anyone has tried growing any *Pigface* or more correctly *Carpobrotus*, and failed, then maybe it's worth trying *Disphyma* in the same soil and conditions. *Disphyma*, in trials, has certainly shown it can be grown successfully outdoors in most Australian gardens (outside of the tropical north), without requiring deep, sandy soils.

Australian *Disphyma* grows most vigorously in the cooler/wetter months of the year and tolerates poorly aerated soils that are often waterlogged. The mostly shallow roots spread widely from each stem node as it creeps along the ground, so it is not as deep rooted as *Carpobrotus*. Benefits to gardeners are that *Disphyma* can potentially grow as a shallow-rooted ground cover around larger, deeper rooted trees and shrubs, without competing for the same nutrients and water on the same soil level. *Disphyma* also has the benefit of helping to dry out waterlogged and compacted soils, while also improving general soil aeration and condition through its root activity.

### ***Glottiphyllum longum* Aizoaceae**

#### **Common names**

The traditional name for this species in Afrikaans is *skilpadkos*, which means tortoise food. Other common names include 'long-tongue glottiphyllum' and 'Tongue Leaf', neither of which is very flattering.

#### **Description**

*Glottiphyllum longum* is a compact growing perennial in habitat forming a dense mat with age. Plants that grow in exposed positions have leaves as short as 5 cm while shade-growing plants have leaves that can readily exceed 10 cm in length. Plants that grow in shade generally appear lush green and more flaccid. The leaves of this species develop in opposing pairs that mostly lie on the ground in distichous rows. Rows of opposing leaves are fanlike, almost horizontal to the ground, but can grow as upright leaves and also commonly displaying horizontal leaves that have upturned leaf endings. All *Glottiphyllum* species have opposing paired leaves that are unequal in size and length and

this rather distinct feature is best observed on newest growth. Fruit of this plant is a significant and appealing feature.

*Glottiphyllum longum* fruits are relatively large, at 15-20 mm across, and very distinct. These fruit turn bright red at their flattened apex before drying to become sturdy seed capsules that are relatively long lasting. Dry fruit stay upright and attached to the plant in a prominent position where they can release small portions of stored seed, each time it rains heavily, which results in seeds being splashed out. Close examination of dry *Glottiphyllum* fruit reveals a set of complex, internal chambers, that are sealed until sufficient moisture in the air, from either fog, dew or rain, softens the dry capsule causing its apex to automatically open (a feature known as hygrochasy). Once the apex is open, the seeds are still kept sealed within lower chambers until hard rain drops directly hit the top of the permeable inner chamber, which then fills (any air cavities) with the first drop of water, but any subsequent drops will automatically dislodge some seeds, which are expelled from the capsule by the ballistic effects generated by the kinetic energy of the raindrops. This rather strange method of seed release or dispersal almost guarantees that seed is safely stored until the presence of good rainfall, sufficient to give the expelled seeds the best possible conditions in which to germinate. Typically, some seeds remain in the capsules awaiting another similarly wet opportunity, which in drier, desert environments can often be rare or erratic. This rather unusual, explosive seed-expulsion mechanism, known as ombrohydrochory, is restricted to most members of the Aizoaceae. Dry, old *Glottiphyllum* seed capsules open and close almost daily with morning dews or moisture from a garden hose and it is quite a remarkable process to watch, if you have a half-hour spare to go back and forth, to see how it progresses.





Above (page 13): *G. longum* showing the abundance of fruit at various stages of maturity; red at first, then drying to brown capsules. All the capsules here show the gradual opening stages caused by contact with moisture. Above, left: Only the inner flattened apex of the fruit are red. Above, right: The complex open dry fruit capsule with three 1 mm diameter seeds (circled) just visible behind a membrane walls – Photos: Michele Kapitany.

#### Habitat and distribution

*Glottiphyllum* species are endemic to the southern parts of South Africa and occur over much of the southern Cape interior. The genus has approximately 17 species, nearly all with bright shiny yellow flowers, 30 - 50 mm, except one with pale orange flowers, *G. ochraceum*.

#### Cultivation

Hard grown in pots replicate habitat, where the plant can appear attractive. This way, *Glottiphyllum* can be grown happily in pots with other small compact growing mesembs. However, when planted in fertile garden soil, this plant often grows vigorously into a mass of green, floppy, messy leaves. These very soft leaves mark easily from snail and hail damage. Garden-grown plants rarely look attractive; however, the large yellow flowers are regular for much of the year. The few people who have it in their garden grow it only for the flowers. Flowers open in the morning and stay open all day, often even in cloudy weather.

*Glottiphyllum* is recorded in many nurseries as 'among the least desirable' of all succulent plants being sold. It feels very flaccid and weak or sickly and prospective customers quickly put them back down. This succulent is, perhaps, best regarded as the 'ugly duckling' of garden succulents.

Both plants in the following photograph were grown from same size cuttings taken from the same parent, yet planted in different soils, in part, to demonstrate



how diverse this species can appear. Both plants are growing in nutrient-deficient soils; however, the larger plant, at left, has a deep root system so is able to absorb and store greater amounts of water. A third cutting of the original parent plant was planted in more fertile soil and can be seen as the luxuriantly green mass on page 13. Leaves and growth habit of immature, seed-raised specimens are even more uncharacteristic, until several pairs of totally upright stems and leaves are produced. Note also the differing number and size of flowers and fruit on each plant.



Two extreme examples of *G. longum* growing in cultivation – Photo: Michele Kapitany.

The genus *Glottiphyllum* is well recognised for the widespread formation of hybrids, both in habitat and in cultivation. It has been suggested that the genera *Glottiphyllum* and *Disphyma* derive from a common ancestor.

Examples of reported intergeneric hybrids include *xGibbaeophyllum*, from a cross between a *Gibbaeum* and a *Glottiphyllum*; *xDelospyllum*, from a cross between a *Glottiphyllum* and a *Delosperma*, which has sterile flowers. Other hybrids have been created between *Glottiphyllum* crossed with a *Faucaria* and a *Conopyhtum* respectively.

In summary, these intergeneric hybrids show that there is no sterility barrier existing between *Glottiphyllum* and several genera, now supplemented with this latest example of an intergeneric cross between a *Glottiphyllum* and a *Disphyma*, resulting in *xDisphyllum*.

### The progeny - x *Disphyllum* 'Sunburn'

A picture is said to be worth a thousand words; therefore, much of this part will consist of a pictorial presentation. All photographs in this part are courtesy of Michele Kapitany.

In **Fig. 1**, *Glottiphyllum longum* (pollen parent) is on the left, while *Disphyma crassifolium* ssp. *clavellatum* (seed parent) is on the far right, with pink flower. x*Disphyllum* 'Sunburn', centre, displays obvious character traits of both parents. In some respects, the hybrid appears to be an even mixture of the two parents. The most obvious difference is the internodal stem spacings (exposed stem sections) which are almost absent on *G. longum*, which naturally grows as a small, tight clump. The hybrid can develop spreading, almost creeping, stems like the *Disphyma*.



Fig. 1

**Fig. 2**, shows the flower and leaf comparisons: *G. longum*, left, *D. crassifolium* ssp. *clavellatum*, centre, and x*Disphyllum* 'Sunburn' at right. *Glottiphyllum* has an even yellow colour while the other two flowers have noticeable

lighter shades in the central area called the 'eye'. Immediately below each flower are the green sepals and pedicel (flower stalk). Note the different lengths of the flower stalks and sepals. Finally, the leaves of all three show the average length and shape by comparison.

The colour of the flowers of the cultivar are influenced by both light intensity and temperature. **Fig. 3** and **Fig. 4** (a close-up of the same plant) illustrate the different colours of the flowers in shade and in full sun. In **Fig. 3** and **Fig. 4**, while a part of the plant is in the shadow of the large rock during the morning, the flower



Fig. 2

colour will be orange on that part of the plant, while the other part of the plant, exposed to the warmth of sun, produces yellow flowers. As the sun rises during the morning, by about midday, if the temperature is warm enough, the whole plant becomes exposed and all flowers will change to a bright yellow colour, the intensity of which increases as the temperature rises. In addition, the flower size increases during hotter weather and decreases in cooler weather. **Fig. 5** illustrates the colour range that occurs during the ageing/maturation process; note the withering flower, at bottom right, has become really orange. From my experience, *xDisphyllum* 'Sunburn' flowers more prolifically and more readily than most garden succulents and, most significantly, for much longer periods.



The cultivar has also proved to have practical benefits in the prevention or minimization of erosion; **Fig. 6** illustrates a large, eroding embankment that

has been stabilised by planting *xDisphyllum* 'Sunburn', beneath a two metre tall specimen of *Brachychiton rupestris*.

Commercial trials for potential mass production and/or planting *en masse*, for roof and vertical gardens, of the cultivar were carried out. From these trials, we discovered a number of things. **Fig. 7** shows an 8 cm pot (with hand for size comparison); the roots of the plant emerged from the bottom of the pot in search of water and nutrients. We found that pots sitting on a bench, with ventilation, grew more slowly and flowered less frequently and less prolifically than their counterparts sitting on cold ground (the balance of the plants in **Fig. 7**) which was irregularly wet for longer periods. Also, note in particular the abundance of flowers in such a small pot.



**Fig. 8** shows one thousand 8 cm pots of the cultivar, growing alongside numerous other different succulents (including cacti). This picture shows uniformity of growth and flowering of the cultivar in a comprehensive field trial. A government inspector from Canberra inspected all the field trials, both in pots and in-ground plantings. Subsequently, the cultivar was approved as a new and worthwhile native succulent hybrid and registered under the *Plant Breeders Rights Act 1994* (Cth), giving me the **exclusive** right to, *inter alia*, produce, propagate and sell the cultivar (or license another person to do so) for a period of years.



*xDisphyllum* 'Sunburst' has proved to be a worthy specimen for both garden and pot culture. Apart from its colourful flowers and foliage, its attributes include:

1. Ideal as a ground-cover or as a pot plant, in most sunny situations;
2. Flowering season extends throughout much of the year, including during winter, albeit not as profusely as in summer;
3. Tolerates cold, drought, humidity, frost and poor water quality, such as bore water, saline water and grey water;
4. Grows in most soil types, including clay; and
5. No weed potential - this is an infertile hybrid, hence cannot produce seed; it does not creep far or smother other plants.

We have used the cultivar extensively in our own gardens, examples of which are shown in **Fig. 9** and **Fig. 10**, and on page 8.



Spring flowering scene in our garden with *xDisphyllum* 'Sunburn' mostly throughout the foreground.



Fig. 10  
Frosty-cold, spring morning in our garden, with the hybrid growing out from under yellow *Sedum* 'Gold Mound', making a great colour combination.

The flowers (**Fig. 11**), and the flowering season, are unquestionably the major features of this cultivar. In fact, everything about the flowering cycle is notable. The leaves themselves can, however, add a range in colour, from a luxuriant lime green to bottle green, seasonally. To a collector of the weird and unusual, this plant itself could appear quite bland, so it may not appeal to some in our societies, but it will certainly appeal to most of the gardeners among us! For further information, and if you are interested in purchasing this plant, please visit my website: <http://australiansucculents.com/> 🌱



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