

## SUTHERLAND SHIRE ORCHID SOCIETY

### Where did the colour go?



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When one considers pollinating a flower to create a new hybrid or even when selecting seedlings off a nursery catalogue there forms, mirage-like in the back of the mind, a vision. For me this vision usually takes the most desirable features of the two prospective parents and combines them to give an idealised image of the best possible outcome. When you buy a lottery ticket you plan to win not lose! I am sure that I am not alone in this because I have read nursery catalogues which advertise each cross with "These should be .".

The question that all of this raises is: "how realistic are these visions"? The answer probably lies in two areas

- plain straight out good luck, we all can fluke it sometimes, and
- understanding the genetic battle that occurs after a successful session with the toothpick or, probably more precisely, understanding the genetic contributions most likely to be made by each parent.

Take two cornerstone native crosses that have not generally lived up to the hybridist's vision splendid, *Sarcochilus Fitzhart* and *Dendrobium Delicatum*.

Case One - *Dendrobium Delicatum*

This cross could create several visions

".dark red speciosum sized flowers with the kingianum shape on mammoth racemes produced by compact plants .", or

".large golden kingianum type flowers on long racemes produced by plants that grow like weeds ." or what about

".speciosum sized flowers shaped like a kingianum that are pure white with a solid purple labellum ( I am not sure if I can use 'silcockii' any more) , one hundred of them on an erect raceme."

In reality what you are most likely to get is twenty-odd smallish white flowers with varying degrees of pink blush mostly hidden on the back of the flowers. Even when the darkest red Den. kingianum available is used and put to a yellow or cream rock lily there is still a preponderance of these typical dellie flowers. Forget flower size and the flower count what I really wonder about is where did the colour go? Not only don't you get red or pink dellies but you don't get yellow ones either.

Unbelievably it seems to go like this:

Den. kingianum x Den. speciosum = Den. Delicatum

Pink x White = White with a pink blush

Red x White = White with a pink blush

Pink x Yellow = White with a pink blush

Red x Yellow = White with a pink blush

At first it doesn't seem to make sense. Has anyone made a dellie using a white D. kingianum - if so did they still produce flowers with a pink blush?

Case Two - *Sarcochilus Fitzhart*

The vision that I am locked into here is obviously one of crimson red flowers shaped like an award quality *S. hartmannii* on robust, easy growing plants. Lets face it as a hybridist you don't look towards *S. fitzgeraldii* for its flower shape or robust growth. What most breeders have been chasing are offspring that display their red genes - the more the merrier!

Once again the reality falls short of the vision splendid. Most *S. Fitzharts* tend to be whites with varying degrees of red in the centre of the flowers which rarely, if ever, extends to the tips of the flower segments - of all flowers on a raceme not just the odd one. Even the majority of *S. Fitzharts* bred from the Numinbah (red centred ) style *S. hartmannii* and full red *S. fitzgeraldii*, such as 'Lorraine' have comparatively little red colouration on display. Perhaps the greatest improvements in more recent *S. Fitzhart* crosses has been in the shape of the flowers. Ken Russell's 769 and 776 crosses using-

- 769: *S. hartmannii* 'Reefer' (Numinbah type) and *S. fitzgeraldii* 'Lorraine'(full red)
- 776: *S. hartmannii* 'Red Circles' (Numinbah type) and *S. fitzgeraldii* 'Red Vic'( two-thirds red)

are evidence of this. Even these don't advertise their colour inheritance but instead proudly declare their their improved "fuller shape" so treasured by orchid judges. This outcome further reinforces my curiosity at where did the colour go?

At the 1997 A.N.O.S. Port Hacking Group *sarcanthinae* show a possible answer became apparent. In the class ' Best *Sarcanthinae* Seedling' (seedling classes are always the most interesting ) were several small plants of *S. Fitzhart* from a sibling cross. These plants had flowers with more than the usual degree of red colouring, some were very close to being full reds. More seedlings from this cross appeared in the same section in 1998 and, if anything, they were better having more red in the flowers, a more intense colour displayed in crisp well-defined markings. One was the elusive 'full red'. These were bred by Ken Russell and were the result of a cross between two siblings from his earlier '769' cross. These interesting little plants have led me to think that the colour was there all along - it was just hidden by some more dominant white genes and they only got to express themselves in the next generation when both parents contributed a similar set of red genes.

'Nowhere' seems to be the answer to my earlier question of "Where did he colour go?". The colour genes were there but they were just sort of out-muscled by some more dominant white genes which had forced them into the background- at least in the case of *S. Fitzhart*.

This may well provide some insight into the *S. Fitzhart* situation but could it also offer an explanation for the *Den. Delicatum* situation ? In the absence of a true *D. Delicatum* sibling cross there is only one *Dellie* outcross that I can refer to for comparison. It was a collaboration between Kevin Wilson and Ken Russell who provided cultivars 'Michael' and 'Dungog' respectively to create Ken's 105 cross. The resulting seedlings produced better than average flowers but they did not boast an inheritance of *D. kingianum* colour genes. Some hinted at it with varying amounts of pink on the backs of the flowers but there were no true solid *D. kingianum* type pinks or reds despite the use of a dark red kingie to make at least one of the original *delicatum*s.

Not being a geneticist I cannot offer an authoritative opinion as to the causes of the variation in the colour outcomes between these two hybrids. At any rate the limited number of plants that I have seen and the small number of sibling crosses available would render any conclusions unreliable however I offer the following as a possibility.

The answer as to why a *S. Fitzhart* sibling cross is able to express increased colour while a *D. Delicatum* outcross isn't able to do the same may be locked up in the genetic makeup of the original parent species. In the case of *S. Fitzhart* both parent species (*S. hartmannii* and *S. fitzgeraldii*) carry some red colouration in their flowers. Admittedly this may be very a small amount in some forms of *S. hartmannii* but it does evidence the ability of both parents to display red colouration and also the potential to contribute red genes to *S. Fitzhart*. These genes may be hidden to some extent in a straight *S. Fitzhart* but become more visible in the sibling cross.

Unlike *S. hartmannii*, *S. fitzgeraldii* and *D. kingianum* most *D. speciosum*s have no red colour on their flower segments apart from the labellum ( implicit here is my lack of experience with the so-called red factor *speciosum*s and the hybrids bred from them). This would mean that *dellies*, unlike *S. Fitzhart*, get their red/pink colour genes from only one parent. A possible further complication to this could be an inherited inability to express the colour genes contributed by *D. kingianum*. The absence of *D. kingianum* colour intensity in the vast majority of *dellies*, even those from an outcross, may be the result of this 'colour inhibition' on the part of *D. speciosum*. The colour genes from one parent are

there but they have been denied greater exposure by some more-insistent white or cream ones originating from the other parent. Once again 'nowhere seems to be the answer to my opening question as to 'where did the colour go?'

The next time you are contemplating creating a new Sarc. Hybrid or you are perusing the latest catalogue with a view to parting with some of your hard earned I suggest that you include S. Fitzhart somewhere in your plans. That is, of course, if you wish to reduce the likelihood of having to ask "where did the colour go?" It seems to me that S. Fitzhart is a better parenting proposition than either of its parents when looking for good strong colours without sacrificing too much in the shape department. If there are any lingering doubts about the potential of S. Fitzhart then check out some its established offspring when they appear on the showbench next season. The following S. Fitzhart hybrids will not fail to impress; Sarc. Jeanne (x Weinhart), Heidi (x hartmannii), Burgundy On Ice (x Judith), Cherie (x fitzgeraldii), Charlotte (x Marion), Judith (x Melba), Pippy (x Peach Spots), Tigress (x spathulatus), Tigersun (x Tigress).

So what of the role of Den. Delicatum in creating new hybrids? To be honest I am not so optimistic about its ability to transmit its parents' colour. At this stage I have no plans for it in my breeding program simply because I don't own a Dellie good enough to breed with but this could all change with just one visit to the 'Native Seedling' section at the next show.

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