CLIVIA

TWENTY-THREE

The Clivia Society www.cliviasociety.org

NPO no. 139-860

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The Clivia Society caters for Clivia enthusiasts throughout the world. It is the umbrella body for a number of constituent Clivia Clubs and interest Groups which meet regularly in South Africa and elsewhere around the world. In addition, the Society has individual members in many countries, some of which also have their own Clivia Clubs. An annual Yearbook and quarterly Newsletters are published by the Society. For information on becoming a member and / or for details of Clivia Clubs and Interest Groups contact the Clivia Society secretary or where appropriate, the International Contacts, at the addresses listed in the inside back cover.

The objectives of the Clivia Society

1. To coordinate the interests, activities and objectives of constituent Clivia Clubs and associate members;
2. To participate in activities for the protection and conservation of the genus Clivia in its natural habitat, thereby advance the protection of the natural habitats and naturally occurring populations of the genus Clivia in accordance with the laws and practices of conservation;
3. To promote the cultivation, conservation and improvement of the genus Clivia by:
   3.1 The exchange and mutual dissemination of information amongst Constituent Clivia Clubs and associate members;
   3.2 Where possible, the mutual exchange of plants, seed and pollen amongst Constituent Clivia Clubs and associate members; and
   3.3 The mutual distribution of specialised knowledge and expertise amongst Constituent Clivia Clubs and associate members;
4. To promote the progress of and increase in knowledge of the genus Clivia and to advance it by enabling research to be done and by the accumulation of data and dissemination thereof amongst constituent Clivia Clubs and associate members;
5. To promote interest in and knowledge of the genus Clivia amongst the general public; and
6. To do all such things as may be necessary and appropriate for the promotion of the above-mentioned objectives.

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Editor
Glynn Middlewick

EDITORIAL

By Glynn Middlewick

The Yearbook now appears at the end of the calendar year. The Clivia Society has altered the format of the publications. The Clivia News editions are available in digital format only. Owing to the prohibitive postal costs, the Yearbook is the only hard copy publication produced by the Society. Some international members will unfortunately only receive digital copies of the Yearbook.

This Yearbook offers some interesting articles. The first one is an historical account of Burchell's travels in Southern Africa. Roger Stewart and Marion Whitehead are the authors of this article. Burchell's journey also covers the probable location of his discovery of Clivia nobilis. Bernard Slippers has produced a scholarly article on the anthocyanin pigmentation and the regulation of the production of this pigment.. James Haxton has updated and simplified his article on photographing clivia. Taking beautiful photographs is essential for all of us who may wish to enter either the Virtual Shows or the Photographic Competition. An article previously and edited by Bill Morris on 'A system of Grouping Peach Clivias' follows. Dawie Strydom gives us an insight into his development of his 'Paljas Magic' 'Cultivar Group' of plants.

The Clivia Society Photographic Competition attracted some exceptional photographs. The quality of the photographs is the most important factor in assessing these entries. The content of the photograph complements the quality of the image. The judges of the photographic submissions this year were James Haxton, Ian Coates and Claude Felbert. We are fortunate to have these knowledgeable photographers assessing the entries in this year's competition. No submissions were received for the Habitat Class. Congratulations to the entrants and to the winners, for the high standard of photographs submitted.

The Clivia Society 'Virtual miniata and Interspecific Show' was held again this year with exceptional entries. At the end of the Covid pandemic, we were not sure what the interest in the 'Virtual Show' would be like. As you may know, the results are determined by a panel of judges, led by Hennie van der Mescht, that assess the entries by examining a single photograph submitted by the entrants – not an easy task! These photographs are included on the website. Some may appear in the Clivia News of February 2023. The winners of the various shows held during the 2022 year will be included in the next Clivia News publication in February 2023.

Our Chairman, Dave Garriock, has updated us on the plans for the 2023 Cape Town Conference. Please make an effort to attend this quadrennial event (Five years this time owing to the Covid pandemic).

Regards,

Glynn Middlewick

COVER: Details of Cover pictures
Photographic Competition – Tie for First Place – Carrie Kruger and Cora de Kock
Photographic Competition – Tie for Third Place – Cora de Kock and Carrie Kruger
TITLE PAGE: Photographic Competition – Single Flower – First Place – Wanda Grunwald
BACK COVER: Photographic Competition – Miniata Entry – Johan Jooste

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REPORT FROM THE CHAIR

David Garriock

With the Covid pandemic at an end, the South African Clivia Clubs' activities returned to a new normality. Meetings, workshops and most importantly, shows, were held by the various clubs. I was fortunate to attend a few of the Clivia Shows and I was re-assured that the interest in clivias remains strong. Hennie van der Mescht and and his fellow judges efficiently assessed the 'Clivia Society Virtual Show' for 2022. Images of the entries and winning plants may be found on the Clivia Society website: www.cliviasociety.com. Congratulations to all the winners.

The Society's long-term survival depends on increasing the membership numbers. The role of the various clubs and groups is essential in attracting and motivating the members to ensure their participation in the activities of the club affairs. A big thank you to Glynn, the Editor, ensuring that the publications are produced on time. I know he battles finding content for the publications, so I am appealing to each club to please submit at least one interesting article for publication for the year 2023. The digitalization of the Clivia News seems at this stage to be well accepted. In future, as decided at the AGM, the only printed publication will be the Yearbook. The cost saving on postage, both local and overseas is significant and we are able to reduce the affiliation fee paid by the members to the Society.

The planning for the Cape Town 2023 Conference, organised by the Cape Clivia Club and convened by André Swart is well underway and we appeal to Society club members who want to attend, to please start planning their visit to Cape Town in 2023. Please note that only the conference delegates may participate in the excursions before and following the conference. The tour group numbers will be limited, owing to the number of vehicles required to transport visitors to these venues. The Wildflower tour will be led by the well-known Mike Spies, Mike knows the 'Knersvlakte' intimately, so even if we miss the peak flowering time of the world famous Namaqualand daisies, we will have the opportunity of viewing the many succulent species available. Following on from the Wildflower tour, the delegates will travel to the annual show of the Cape Clivia Club in Cape Town. Garden visits to the collections of some local growers will be arranged. The dates of the show are the 30th of September and the 1st of October. The Conference follows, on the 2nd and 3rd (may also involve the morning of the 4th) of October. An auction of exceptional plants will be offered as well as a tour to the Kirstenbosch Botanical Gardens. Following on from the Conference, there will be a tour to some of the mirabilis habitat areas. Felix Middleton will be the guide for this tour. A full day will be spent exploring the mirabilis plants in their natural surroundings. All the relevant information, application forms and further details will be available on the Clivia Society website 'www.cliviasociety.com' early in the new year. Lisa has once again done an outstanding job maintaining the website for us. We will be using her expertise for the promotion of the Conference. I would like to request clubs and groups to update their website information regarding shows, to allow visitors to be aware of other possible venues to visit.

The Clivia Society is busy planning a new 'Clivia Colour Card III'. This card will be available in hard copy and in a digital format for international members to print their own copies. The target date for the release of this colour card is August 2023.

Finally, a big thank you to the Society Executive members for their support through the year.

ARTICLES

Burchell's lucky *Clivia* find

Roger Stewart & Marion Whitehead

William John Burchell (1781-1863) is credited with being the first European naturalist to discover the plant now known as *Clivia nobilis*, which he found in 1813 while travelling in South Africa's eastern frontier region. It was a lucky find that puzzled him.

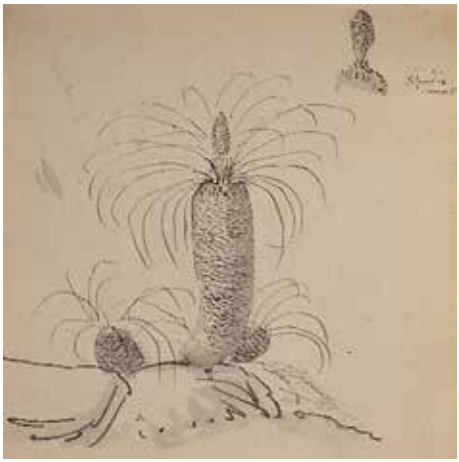
William John Burchell's discovery of the clivia was serendipity: the fortuitous consequence of a failed crossing of the notorious drift across the Kowie River (at today's Port Alfred). According to John Barrow, the drift was a 'horrible chasm' that required a team of sixteen oxen to draw a wagon across the river and up the opposite bank.

In an unsent letter to Capt. Lynch at Rietfontein, Burchell explains that, on 26 September 1813: 'I …narrowly lost one of my wagons' 4: one became stuck in the mud while attempting to cross the Kowie drift towards the west bank. The tide turned and some wagon contents 'were wetted.' Fortunately, he and his team managed to extricate the wagon and get it back to the eastern bank from which they had started the crossing.

On 28 September, he set off on a circuitous route to Rietfontein, which meant return to Grahamstown (now Makhanda). In the evening, he outspanned and camped beside a stream where wild date palms (*Phoenix reclinata*) grew abundantly on its banks and so, he named this campsite 'Date Tree Station'.

It must have been an attractive spot because he remained there for another day to explore the thicket. He collected the beautiful marsh lily (his *Crinum aquaticum*, now *C. campanulatum*) and a plant that puzzled him. It was new to him and to science and, ever the meticulous record keeper, he entered the details into his *Catalogus Geographicus*. His handwritten note for his specimen (CG 3873) reveals Burchell's uncertainty in classifying the plant genus. Was it an agapanthus or cyrtanthus? Dr John Rourke kindly translated Burchell's Latin entry for the plant in his *Catalogus*:

Cyrtanthus ??
Rootstock thick tuberous with fibres (Agapanthus)
Leaves radially arranged (Agapanthus) flat, often obliquely twisted
Flowering stem or scape two edged compressed
Flowers pendulous orange-red with green tips, stigma three lobed
No odour
Leaves brittle containing fibres



Burchell would later record above the description: '*nov gen* ('*novus genus*', i.e., new genus) Bot Reg', reference to the 1828 article in the *Botanical Register* in which the new genus, *Clivia*, was described by John Lindley.

While researching our book on Burchell's return journey and retracing his route, we set ourselves the challenge of finding 'Date Tree Station'. After poring over old maps, farm surveys and using Google Earth®, we concluded that his 'Date Tree Station' was probably near Birbury farm, about ten kilometres on a bearing 15° east of true north from the Kowie River mouth. In September 2020, we visited The Glen, a neighbouring farm, and were delighted to find the wild date palms (*Phoenix reclinata*) on the banks of a stream and a *Clivia nobilis* hidden in the dense thicket nearby. Of course, we cannot be sure of the exact location of Burchell's 'Date Tree Station', but we were probably close.

Burchell's *Clivia* adventure did not end there. After exploring the area around his 'Date Tree Station', Burchell proceeded towards Grahamstown, stopping off at the Blaauwe Kranz military post, commanded by

Lieut. John Laycock. Burchell had befriended Laycock and his wife earlier in the month when he lingered at the outpost to botanise for a fortnight.

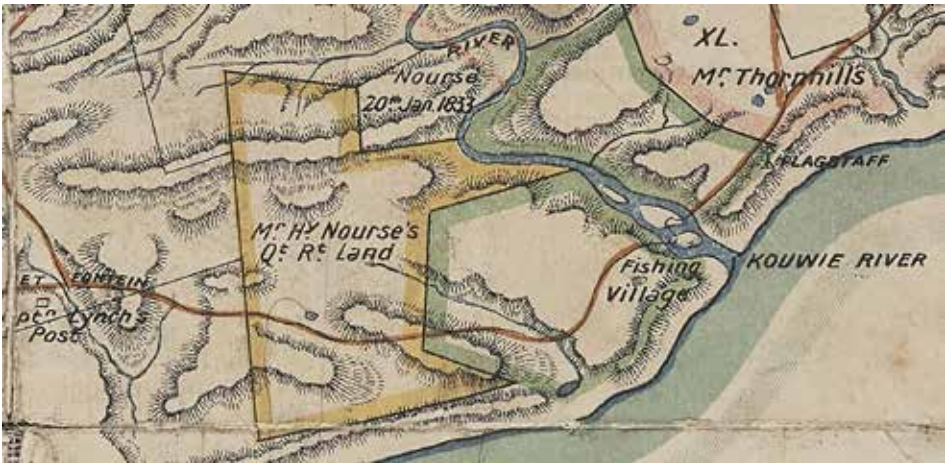
However, on this visit, he remained only for the night of 29 September. Nevertheless, he noticed and drew the unusual Eastern Cape blue cycad (Zamia horrida, now Encephalartos horridus), now endangered in the wild. Laycock must have convinced Burchell that he did not need to return to Grahamstown and rather take the circuitous route via Rautenbach's Drift to reach Rietfontein, less than ten kilometres west of the mouth of the Kowie River. There was a track used by the military that crossed the Kowie River at a drift some twenty-five kilometres upstream of the mouth. The track emerged from the tangled valley thicket not far from Lombard's Post, about ten kilometres north-west of Rietfontein.

The next day, Burchell's party set off on this route to Lombard's Post, together with an armed escort of three soldiers from the Cape Regiment, who were riding oxen, a common practice in those days. But Lombard's Post was some twenty kilometres away and the going was tough, especially with his overladen wagons. The route, probably no more than a rough track, traversed dense Albany thicket and hilly terrain. Could they reach the safety of the military post before nightfall? The military post would be preferable to camping out in the country that had been the site of regular raiding during the fourth frontier war that had ended the previous year.

However, 'from the badness of the road I was unfortunately compelled to pass the night camping out in the bush' , rather than at one of the fortified outposts, as had been his usual practice since departing for the frontier from Bruyntjes Hoogte (near today's Somerset East). He had not yet crossed the Kowie River and therefore was still some distance from Lombard's Post.

During the night, his staff and the soldiers heard 'an unusual bustle among the oxen' but did not investigate or alert Burchell. In the morning he discovered that twenty-four oxen had been stolen and the soldiers had absconded, leaving the party unprotected. Burchell was furious and, while keeping guard of his wagons and their precious cargo, he sent one of his staff to deliver a letter requesting assistance from Lieut. Gair, the officer commanding Lombard's Post. The party managed to reach Lombard's Post later that day. Burchell's book does not cover his return journey and there is no record of how the party managed to reach Lombard's Post; it is probable that that Lieut. Gair responded by sending oxen to Burchell.

The following day, Burchell continued to Rietfontein (now Elmhurst), a farm with a fortified house, some ten kilometres to



the south-west of Lombard's Post. For almost three weeks, he botanised from this base, adding 140 herbarium specimens to his collection. On the 25th of October he headed back to Lombard's Post, *en route* to Rautenbach's Drift, from where he would proceed to Uitenhage, then the seat of the *landdrost* of the Zuurveld (i.e., Albany). Along the way, he must have meandered into the thicket because he collected the torch orchid (*Disa chrysostachya*) and discovered another specimen of the same mystery plant (his specimen CG4131) that he had discovered at Date Tree Station and which he had tentatively named *Cyrtanthus sylvatica*.

The land to the east of the Rietfontein-Lombards road is still well known for its wild *Clivia nobilis*, some with unusual colouring.

This area has another, unanticipated association with Burchell. In 1821, when Burchell was back in London, the land where he discovered the second clivia specimen was allocated to Henry Nourse. This businessman had persuaded Burchell to be interviewed in 1819 by the British parliamentary committee investigating possible locations for emigrants to the Cape Colony under the Poor Laws. Burchell's views were published in his '*Hints on Emigration to the Cape of Good Hope*'. In 1820 British settlers landed at Algoa Bay and then proceeded to land allocated to them in Lower Albany.

Annie De Wet Steyn's Clivia Wonders Nursery is on this land (now named Riverview) between the Kowie River and Rietfontein that was allocated to Nourse: see below John Knobel's 1820-1822 survey of Lower Albany.

Burchell's herbarium specimens of the clivia

are conserved at the Royal Botanic Gardens, Kew and can be viewed online. However, Burchell did not play any role in the intriguing story of the source and naming of *Clivia nobilis* in 1828 – related by John van der Linde in the Clivia Society's 2005 Yearbook. Burchell was in Brazil at the time, when his unnamed plant, discovered fifteen years earlier, but not referred to by any of the key actors in the cast of the saga: William Hooker, John Lindley, William Aiton or James Bowie. Would they have mentioned Burchell's discovery in 1813 had he been in England in 1828?

Almost a decade after the naming of the new genus, William Herbert reported that Burchell had shown him some roots of the mystery plant shortly after Burchell's return to Fulham, London in November 1815. He had explained to Herbert and John Tate, the nurseryman, exactly where he had found the plants. In 1816 James Bowie arrived in Cape Town, having been sent by Aiton to collect plants in the colony for Kew , and he may have collected the roots that were later successfully cultivated, perhaps the plant described in the Botanical Register. I cannot find any record in Burchell's unpublished *Hortus Fulhamensis* that he successfully cultivated *Clivia nobilis*.

Failure to acknowledge Burchell's role in the discovery of what became a popular garden plant may have been par for the course in the competitive field of horticulture in the nineteenth century. However, it must have been another disappointment for a man who devoted his life to the study of not just plants, but to whole systems in nature and who developed into an ecologist, long before the term was invented.

Roger Stewart and Marion Whitehead are the authors of the book, *Burchell's African Odyssey: Revealing the Return Route* (Struik Nature, 2022). We thank Dr John Rourke for his Latin translation and John and Sandy Richter for access to The Glen.

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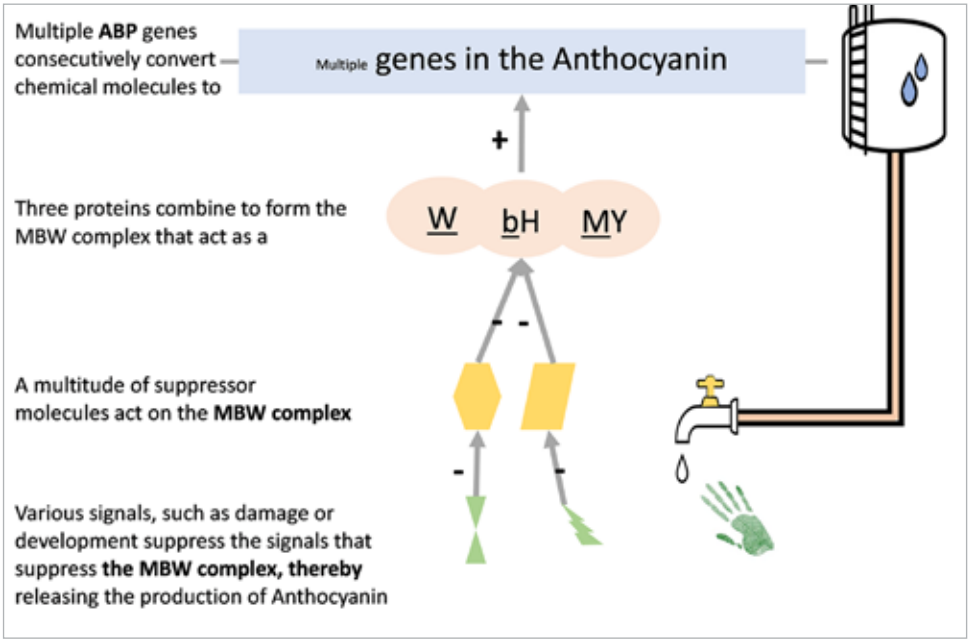
The complexity of flower colour formation: Regulation of anthocyanin production and its relevance to flower colour in *Clivia*

Bernard Slippers

Background

The colour in *Clivia* flowers is produced by three types of pigments, namely anthocyanins (red), carotenoids (yellow) and chlorophyll (green). The colour in the flowers is formed by the intensity (amount) and pattern of the deposition of these colour-reflecting molecules in a 3D matrix of the cellular layers of the tepal/sepal. The colour we perceive is not formed by the physical mixture of these pigments (like paint), but by the patterns in which the pigments are deposited across the tepal/sepal (and in layers) and the mixture of light reflections from these pigments.

Anthocyanins, carotenoids and chlorophyll are ubiquitous in flowering plants. These pigments are not only involved in reproduction for the formation of colour in flowers, but are produced throughout the tissues and developmental stages, with various critical functions in growth, development and defense. They are pleiotropic, meaning they affect a variety of biological functions in different plant parts. Consequently, the genes and pathways that underlie the production of these pigments are highly conserved amongst plants. While these genes have not been characterized in *Clivia*, they are also expected to be conserved in this genus.



Very few genes are expressed all the time. Virtually all our genes are regulated so that they are only expressed when they are needed. Such regulation happens in various ways, through proteins or molecules binding to the DNA or RNA. This prevents wasteful cellular processes, which would have negative energy consequences for any organism.

The same is true for colour variations in flowers, which in most cases is the consequence of the regulation of expression of genes that underlie the production of colour pigments in certain tissues. The expression of these genes and the processes they control are increased or decreased at certain times and in tissues during development.

In this article, we discuss what is known about the production and regulation of anthocyanins in flowering plants, and what this might mean for colour formation in Clivia. For this purpose we specifically refer to a recent international review on the topic by LaFountain and Yuan (2021).

Anthocyanin production

Anthocyanin is part of a group of chemicals or metabolites called flavonoids. These chemical compounds occur widely in plants and are responsible for red, blue and purple colors in flowers, autumn leaves and fruits. They are also present, albeit not always visible, in vegetative tissues, where they have various roles, for example, protecting the photosynthesis machinery from UV radiation, detoxifying harmful oxidants that build up during environmental stresses (such as drought, temperature and more) or to protect plants against pests and pathogens.

Anthocyanins are produced through a highly conserved pathway or process called the anthocyanin biosynthesis pathway (ABP). This pathway includes 10 or more proteins that all play a role, which consecutively converts starting chemicals into the eventual anthocyanin products.

The production of anthocyanins is regulated because the pigments are needed in different tissues of the plant at different times and in different quantities. For this reason, plants have evolved very complex regulatory mechanisms that can respond to a myriad of different internal (eg. development stage) and external (e.g. physical damage, temperature, etc.) signals during the development of the plant.

The regulatory mechanism of anthocyanin production is known as a 'double-negative logic' regulation. This regulatory mechanism is common in plants with molecular processes that require rapid response to environmental or other cues. The double-negative regulation means that there is a two-step process to the regulation of the gene – a primary regulator (often stimulating production continuously) and a secondary regulator (often repressing the primary regular) that responds to various input signals. Signals that suppress the secondary regulator (suppresses the suppressor – thus the 'double negative logic'), indirectly activate the primary regulator/stimulator.

An analogy to understand this is water in our homes. The water comes from a reservoir via a pipeline to our homes. This pipeline is like a primary regulator and is always full of water or 'turned on'. The flow of the water from this pipeline is regulated by a tap, the secondary regulator. The tap, however, needs a hand or a signal to open it– and can be opened fully or partly. The hand that acts on the tap is the 'double negative logic' that allows the water to flow.

The main or primary regulator of the ABP (Anthocyanin Biosynthesis Pathway) is called the MBW complex (Regulatory complex) and is conserved in all angiosperms studied to date. The complex is made up of different proteins that interact and bind each other. This regulator activates genes in the ABP, and thereby stimulates the production of anthocyanins.

In addition, there is a whole range of secondary regulators, most of which act on the MBW complex, and mostly to suppress its action. By suppressing the MBW complex, these regulators also suppress the production of anthocyanins. Various signals, such as

Figure 2. Examples of 'bleeding' in flowers of Group 2 yellow and green plants, which provides an example of a mutation in a regular influencing the normal production of this chemical in the flower, as opposed to a mutation that made its production impossible under all conditions. Photos curtesy of Dawie Strydom.

environmental triggers such as temperature, development – chemical processes relating to development (ripening, petal formation, etc), can deactivate the suppressors, and thus release the MBW complex to stimulate anthocyanin production.

In the case of anthocyanin production in flowers, the MBW complex is like a pipeline, while the secondary factors that regulate the MBW complex are like taps. The signals that control these secondary factors are like hands that turn the taps.

While these processes have not been fully studied in *Clivia*, it is expected that *Clivia* would have these same conserved processes as found in all other flowering plants (as explained by LaFountain and Yuan (2021)). Albeit limited, prior work done on *Clivia* and related plants support this hypothesis. This includes work to characterize the pigments, as well as on the genes underlying the production of the pigments in *Clivia* (see for example Snyman, Spies and Viljoen, and Hammett 2006). Quite extensive work has also been done in other Amaryllidaceae, which also support this hypothesis (see for example Wang *et al.* 2021). The study by Snyman, Spies and Viljoen confirms the presence of key genes in the ABP pathway in *Clivia*, and its close relation to those of other related monocots.

Anthocyanin and colour formation in Clivia

It has often been stated that yellow plants have a mutated gene for anthocyanin production in the ABP pathway. Given the general importance of anthocyanin in plants, and its conservation in all plants, it is unlikely that these are mutations in the ABP genes that completely disable its production. No anthocyanin production is likely to lead to developmental issues (weaker plants) and there is no evidence that yellow flowering *Clivia* suffer from any developmental issues. Rather, anthocyanin production is likely only suppressed in some developmental stages in yellow plants, and in these cases clearly in the leaf tissues in early development (green stems) and in the flowers. In the light of the

mechanisms described above, the mutations that create this effect are likely in one of the secondary repressors of the MBW complex. This suppressor does not respond in the same way as in orange plants, and thus the MBW complex is not 'released' to stimulate anthocyanin production.

This conclusion is supported by evidence that low levels of anthocyanin production is maintained in at least some yellow Clivia. For example, as Snyman, Spies and Viljoen demonstrated the anthocyanin pigments are present in the yellow flowers of Group 2 yellow plants, albeit at least 16 times lower than in a standard orange flowering Clivia plant. The analysis by Hammett (2006) did not detect anthocyanin in the flowers, but it is not clear if this is because of less – sensitive methods were used than in the later study by Snyman, Spies and Viljoen, to reveal the very low levels of anthocyanin that they found. Considering all the evidence, it is more likely that anthocyanin production is inhibited, and not altogether disabled by a mutation in a gene in the ABP pathway. This would also explain the red 'bleeding' upon damage to some yellow flowers. In this case the suppressor is inhibited by the damage signal in the flower, thus releasing the MBW complex to stimulate production of anthocyanin around the site of damage. This is a known protective mechanism in other plants as well and demonstrates that anthocyanin production is not completely disabled.

It is common knowledge among *Clivia* breeders that a cross of group 1 and group 2 yellows produce orange plants. In the light of the above discussion, the mutations and complementation of alleles is likely necessary for the regulators and not the ABP genes. A cross between these two lines will then provide a non-mutated regulator of the anthocyanin production from each parent, which then allows for the 'release' of the MBW complex at the right time, allowing anthocyanin to be deposited in the flowers and young stems.

A System for Grouping Peach Clivias

REPRODUCED AND EDITED FROM CLIVIA NEWS 19.2

Bill Morris

In the Clivia Newsletter Vol. 8, No.1, p.10-13, Autumn 1999, I proposed a list of yellow clivia cultivars divided into two types – namely Group 1 and Group 2.

I used this terminology as it had been used previously by C.C. Hurst. In his "Experiments with Genetics (1925) he described two types of white Cattleya orchids which breed true when crossed within their groups but when crossed between the groups produce normal purple Cattleya flowers (presently this is described as the action of complementary genes). I had also suggested in an article in Herbertia No. 46, p.95 – 96 nearly ten years earlier (1990) that the crossing of various yellow clivias to give orange flowers was also due this same mechanism.

More recently I have been trying to understand the situation with Peach clivias and related types (pinks, apricots etc.). My conclusions about these clivias and their pigments formed have led to the groupings I have given below and I will outline these steps.

A number of years ago I had the opportunity to observe and compare a number of peach *Clivia miniata* plants in the collection of Mark Cant, a young Australian horticulturist – namely five separate peach plants which have been registered as 'Cant's Europeach Cultivar Group' (which emerged from a batch of imported European imported orange seed) and two imported Dave Conway (ex U.S.A.) peaches, 'Tessa' and 'Helen' – which were on loan to Mark.

It was possible to match the 'Tessa' and 'Helen' flowers with the 'Cant's Europeach" flowers as far as my eye was concerned – however the 'Cant's Europeaches' all produced peach coloured berries whereas both 'Tessa' and 'Helen' produced orange/red berries. This immediately suggested that although the flowers of these peaches were very similar, they were in fact two different types of peach.

Following on from this observation, I have since been trying to collect information about the berry colours of as many peach, pink, apricot miniata flowers as possible. Unfortunately, I have found that berry colours are rarely published when particular cultivars are described or pictured. I have managed to obtain information about a few examples. 'Naude's Peach' has red berries, 'Wittig Pink' has maroon berries and 'Anna Meyer's Peach' has red berries.

From the book 'Clivias' by Harold Koopowitz, I found that the Dave Conway-bred 'Dorothy' described as having 'bright cerise berries'.

Koopowitz then details Conway's breeding method – which was to put mixed pollens (presumably from his own plants on to 'yellow and orange flowers. From one such endeavour, Conway obtained around one thousand seeds which he grew to flowering stage. What would I expect the result to be? Probably, mainly shades of orange flowers with occasional yellows (depending on how much yellow pollen was in the pollen mix). Some may have flowered darker orange or red. Koopowitz then states that the flowering batch included several peach-coloured flowers and some had pink flowers, one of which was named 'Tessa'. The peach and pink colours were rare. The rest probably bloomed light orange. Conway kept the rare flower colours and some others he decided were worth keeping. Conway then

named these plants them and they became his commercial stock, propagated vegetatively and offered for sale. Based on the above detail, all of Conway's pastel, peach and pinkish flowers would have orange, or similar, berries.

Again in 'Clivias', Koopowitz writes that 'Anna Meyer's Peach' is an 'apricot coloured clone that appeared spontaneously in Meyer's Breeding program' Koopowitz states that Anna Meyer bred her first peaches using yellow pollen.

Christo Lotter's peach breeding information stated that in 1993 he flowered a cross of an orange (berry parent) with a yellow (pollen) which was pink. In 1994 when it flowered again the colour was said to be apricot'. He put this apricot pollen onto another yellow and when the offspring flowered they were peach. Presumably his peach strain derives from line breeding these plants. However, the fact is they started from an orange x yellow cross.

In an email, dated 23rd April 2009 Rudo Lotter explains his breeding experiments aimed at recovering 'Naude's Peach' from his father's cross of 'Naude's Peach' with a (Group 2) 'Giddy Yellow'. Rudo backcrossed 'Naude's Peach' onto his father's cross with the expectation of 25% Group 2 yellow flowers, 25% 'Naude's Peach' flowers and 50% orange. From this backcross (about 500 plants) Rudo has flowered yellows (green stemmed seedlings), 'pastels' (pigmented stemmed seedlings) but only one peach. Unfortunately, no counts were quoted but one out of hundreds is roughly similar to Dave Conway's 'several out of one thousand'. The reason that the peach was so rare is simply because they are not a single gene mutation but probably just rare gene combinations of regulatory genes.

Victor Murillo explains the history of 'Victorian Peach' in his article in the Clivia Yearbook No. 9. He states that the breeding involves a Belgian peach and two high quality yellows from Eric Anderson. They produced a group of original peach-flowering plants. Eric Anderson mentions that he crossed a peach with yellows. The results that Eric produced were a variety of dark and light peach-coloured flowers.

Peach is usually dominant over yellow (both 'Chubb Peach' and 'European peaches'), but they can produce varying depths of colour.

Having originally used Group 1 and Group 2 labels for yellows, in addition, it now appears there is a third group (Group 3 Alpha yellow and yellow offspring). To avoid confusion with 'groups' I suggest we now use Type A Peach and Type B Peach for the different Peach types as follows:

TYPE A Chubb Peach

TYPE B Cransley Peach

TYPE C European Peach
Cant's Europeach Victorian Peach
Original Cameron's Peach

TYPE D Meyer's Peach
Conway Peaches
Poor Man's Peach
Tessa

Type A and Type B are different, single gene mutations similar in that they both produce peach pods.

Type C and D are both rare, multiple gene combinations similar in that they produce non peach berries – generally orange or red.

Note that I have ignored referring to 'green stems' versus 'pigmented stems' in this article because I do not believe it means anything except how much pigment the plant can produce and how long it takes to produce it and under what environmental conditions

There are numerous other plants that can be added to these groups.

The most important thing is that crosses within the Types will breed true while crosses between the types will generally give oranges. However, TYPE A and TYPE B will give 100% peach when selfed (unless they have been crossed with yellow and are thus heterozygous,

when yellows can occur).

In other TYPES of peach, because of their orange x yellow background they will not give 100% peach flowers. There will be a much higher percentage of peach, possibly 50% or more, but some yellows and oranges of varying colour intensity will be produced. Line breeding these peaches will increase the percentage of peach flowering plants.

'Wittig's Pink' and other pinks are sometimes called peaches and should be placed in the various Types in this article. They are basically flowers that contain dilute concentrations of anthocyanins.

Just as in my original yellow listing, some of these Types may be listed incorrectly.

'Artwork by Ian Coates'

Photography – Advice for the Layman

THIS ADVICE APPLIES TO THE PHOTOGRAPHING OF FLOWERS

James Haxton

There are times when the subject outweighs the quality of the photograph and sometimes the quality of the photograph is more important. Examples may be found in entries for the Virtual Show and in the Clivia Society Photographic competition.

The 'Flower' as the Subject

'Virtual show' judging has the images of flowers submitted, which will be considered for winning positions. For the 'Virtual show', we are having the flowers judged, not the pictures. However, if the picture is poor, this will distract from the quality of the flower entered. Care must be taken to ensure that important details are included and the colours are presented correctly. To ensure that your entry presents itself to the judges in the best possible way, you must get the picture right. Unfortunately, a good picture will not improve the appearance of a scruffy flower.

What is necessary to portray your pictures in the best possible way? Your pictures are a means of recording the image accurately. The picture is not meant to be artistic, colourful or appear with excessive contrast, unless entered into an 'Artistic Class'. The Judges are encouraged to observe the image and not be distracted by any surrounding effects.

'Product' photography is what we want. Advertisements in magazines display a complete absence of background distractions, to ensure the product is the most important item to be seen!

Competition Consideration Checklist

I made this list of all the C's just to make it easier to remember. This is a list of items that should be considered when photographing our plants.

CAMERA ANGLE

While aiming the camera at the subject, move the camera higher or lower, to the left or right and notice how the flowers in the umbel

Figure 1 and 2 are the same flower shot at different angles.

vary relative to one another. The view of the background also changes. This is a good time to watch for any distractions that may come into view. The idea is to move the camera around until the flowers 'present' themselves in a pleasing pattern, or the better flowers are in the front. If necessary, rotate the umbel to 'present' the better flowers in the front of the image.

When moving closer to the image, the frame is filled with the image, but the subject also starts to distort. The items in front are always larger that the items at the back of subject. This is normal perspective. If your move too close, the flower sizes are exaggerated and at this point the image distorts and is not what you want in your image.

When you are too far away from the subject, the item is too small in the frame and the image has to be cropped and enlarged. This results in a loss of image quality.

CLUTTER

Any unnecessary object contributes to clutter. Clutter distracts the viewer. Even a plain background can be distracting. If it is unnaturally smooth one wonders about the surface. If it is very rough one tends to make out detail in the background.

Foreground clutter is also a problem, which may easily be avoided by making the 'subject' the 'foreground'.

Isolation is achieved by shooting with a wide open lens and throwing the background out of focus. The background is then blurred so individual details do not attract attention. Unfortunately, this is difficult to do with an ordinary cell phone camera.

COMPOSITION

Composition is a moot point with only one item in a picture for a competition submission. The judges are not going to be looking at composition. However, pay attention to the following:

Rule of thirds: Place the umbel on the upper right or left intersection of the thirds.

Balance: can be exploited in 'Virtual Show' entries by placing the label with the entry information on the opposite third intersection of the umbel.

For symmetry, the umbel can be tightly cropped dead centre. The label, if necessary, may be placed below the image

COLOUR

This is one of the most important features to present correctly, as the colour is an important item that will be judged.

The first thing to consider is the 'white balance' (WB). It is quite easy to, do by observing the environment and choosing the corresponding setting on the camera. Do not use auto white balance as it is usually incorrect! 'Cloudy' means fully overcast, 'daylight' means sunshine directly on the subject. As a result of this choice, all the shadows will be blue – the reflection of the sky colour! There is usually a setting to correct that, provided that the subject is fully-shaded. If the leaves in the image appear blue, the judges will assume that the flower colour is incorrect. To fix the blue leaf problem, the white balance should be set to the ambient light. Ensure that any objects, like the leaves that may reflect light, are covered. The main cause of the blue leaves is the blue sky when the clivia is in the shade. It is also hard to screen out. What does work is using a white sheet placed between the subject and the sky, behind and above the camera.

Saturation is a much-loved evil in colour photography. The most beautiful *Clivia* colours are displayed as tonal ranges in the flowers and tepals. Too much of an increase of the saturation, spoils the subtle tones and we end up with a solid colour – one shade of colour fills the flower. The colour of the tepals in an umbel usually varies a lot, ranging from light orange to reddish orange to greenish orange. The variation in the shades of colour shades found in the flower enhances the beauty of the subject.

How can we provide the ideal saturation of our image? This is not simple, but it is always better to keep saturation low. Set the camera

Figure 3

to neutral settings rather than bright, vibrant, brilliant or similar settings. The images may look better with these settings, but is not appropriate.

Figure 3 is an image of eight shots taken under different lighting conditions. The background used was grey cloth. For the top row, all shots were taken with the White Balance set to SUNLIGHT.

The first image was taken in a shaded area. There is too much blue colour present, found on the leaves and on the white t-marker in the foreground.

For the second image, the full sun has been filtered through a diffuser, just to mitigate the harshness of the shadows we get in full sun. Now, the colours are correct; the grey background looks grey and the white t-marker looks white. The third shot was taken in the shade house. The shade cloth is green. We can see the colour is rendered incorrectly by observing the grey background and the white marker.

The last image in the top row was taken outside on a cloudy day.

Again, all images in the top row were taken with the White Balance on the camera set to SUNSHINE.

To correct the colour errors, one can adjust the settings on the camera to compensate for the different light levels. The bottom row was taken using more appropriate settings. The camera comp ensated in getting the colours correct, judging by the results. The only problematic shot was the one in the shade house as the camera did not have a setting for that. A custom set-up could be used, but not all phones/cameras can do that. I used an external flash to correct the colour in this example. A good flash on a cell phone is asking a lot, so that may not be satisfactory. I would chose to move the plant outside for the shot. As we will see later, the best option is diffused sunlight.

Here are three images of leaves, all taken in the same location, which is a shaded area. This is the usual place where clivia grow in

Figure 4

Figure 5

Figure 6

the in the garden. This position of the clivias in the garden and when grown in a green shade house are the most difficult locations for provision of good plant colours.

The first image (figure 4) was taken in shade using incorrect WB (White Balance) setting (sunlight).

The second image (figure 5) was taken in shade using SHADE WB setting. There is still a problem with the colour, which the WB (White Balance) setting cannot correct. The leaves have a sheen which reflects the blue sky behind the camera on to the the camera lens. The only way the colour may be corrected in this image by eliminating the reflection.

Figure 6. In this photograph, a white translucent sheet was used to screen off the blue sky behind the camera, with a reasonable measure of success.

CONTRAST

Most camera phones have a filter menu. One of them would be contrast or curves. The menu normally displays a histogram and the curve.

Histogram

The histogram is a bar graph of all the tints, shades or tones in the image. If we study the histogram we see the number of pixels (picture elements) as the height of the bar. The dark pixels are shown on the left, increasing gradually and evenly to the light pixels on the right. The idea is not to have any pixels outside the histogram of the image. To know whether the pixels are outside the histogram graph, we would look for pixels that are bunched up on either the left or right hand side of the graph. Detailed description of the histogram may be found in Wikipedia and is well worth looking up if one is not familiar with histograms.

The basic function of the contrast filter is to lighten the light areas and darken the dark areas, in effect increasing the difference between light and dark areas, creating more contrast. The downside of this is that the tonal differences in the boosted areas are compressed and detail is lost. If we reduce the contrast between light and dark, we land up with a dull image.

CLARITY

Clarity is another word for a good image quality. If the clarity is poor, the image quality is poor. Detail, tonal range and accurate colour representation is lost. There are a few easy actions we can take to ensure a good image quality.

Firstly, make sure the subject is in focus. The camera focuses automatically and can sometimes focus on the wrong object. The focus of the camera should be on the front of the subject, as this is the most important area of the image. Secondly, make sure enough of the image is in focus. It may be necessary to zoom in on the review to be able to view any out of focus-blur.

Motion blur is caused by a 'too slow' shutter speed which does not overcome shaky hands or the subject movement in a breeze. Motion-blur does not look the same as focus-blur, but it adds to the total blur. Any blur causes detail in the flower to be lost.

The use of lighting benefits the photographer the most. The more light there is on the subject, the easier the camera can cope. I personally prefer diffused light to direct light so I can easily avoid harsh shadows. Another way to avoid shadows is to use a reflector on the side of the shadows. A suitable diffusor or reflector is necessary to avoid shadows. Clouds are a good natural diffuser provided there are no large blue gaps between the clouds, that can be reflected off the leaves.

NOISE

When light is insufficient for a good shot, the camera will try to either increase the exposure by lengthening the exposure time, or simply by underexposing and lighten the image by means of the ISO setting. In automatic modes it may be necessary to keep an eye on the ISO setting, to avoid potential underexposure. The higher the ISO, the lower the exposure. Underexposed images are noisy and lack a good tonal and colour range. The chosen ISO setting does a good job at lightening the image but cannot mitigate the other issues.

EXPOSURE

The camera's image sensor must have the correct exposure to avoid overfilling the sensor. Overexposure can be seen on the histogram if the camera has that tool. Overexposure means that the bright areas are devoid of any detail. To avoid that, cameras have a meter that measures the light coming from the subject. The camera then adjusts the shutter speed to limit the light falling on the sensor. If our background is pure white or pure black, and we shoot this background, the camera will adjust the exposure to render the white or the black background to middle grey in the picture. By placing a clivia in front of the background, the camera will compensate and expose for the average light to be middle grey. It is now

apparent that the same flower will be exposed differently against different backgrounds. Now that we know how exposure may vary, we can correct for that by adjusting the exposure compensation, called (EC) on most cameras.

CROP FILTER

Using the crop filter on the camera is a handy way to cut unwanted surroundings from the image. One can also choose the aspect ratio of the image and how the subject is framed. Bear in mind that any loss in size also means a loss of image quality.

CALIBRATION

Not all monitors are well calibrated. Most people set their contrast and brightness levels, focussing on an arbitrary image. The reference image may not be calibrated, which means that one's calibrated monitor now works only for that image. The problem now is that you do not know what the image will look like on any other monitors.

My view on calibration is to reset the monitor or camera to the original factory settings. By doing this we know that we conform to a standard.

EDITING

In addition to the limited editing the cell phone camera offers, specialised editing software is readily available. User interfaces can be easy or very difficult to use. I suggest the download of a free application. FastStone is an example. It's free, easy to use and has an intuitive user interface. When submitting images for publication, a reasonable size is required, so the printer can downsize for better quality. At the popular 300 pixels per inch, the submitted image must be at least 1800 by 2400 pixels, or 4.32 megapixels, in size for a full page.

Your photo images will continue improving with practice. By manipulating the light, camera and plant position, your images will reward you with a true description of the image captured.

'Artwork by Ian Coates'

‘Paljas Magic’ *Clivia* ‘Cultivar Group’ Cultivation

Dawie Strydom Clivia Select, Northcliff, Johannesburg, South Africa

1. Introduction and objective

This article focuses on the development of a clivia ‘strain’ with new colours and shapes which I have named ‘Paljas Magic’ ‘Cultivar Group’. The variation in the shape and colour found in the 27 plants that were bred, is also documented. The results present a summary of two generations of breeding after the initial crossing of ‘Jumbo Yellow’ and ‘Four Marys’, as described in the Clivia News Vol 27 no 3, 2018.

This article covers the development of the ‘Paljas Magic’ ‘strain’, plants that were produced in the F2 generation. The genetic variation, flower forms and shapes are also discussed.

2. Plants used in the breeding program.

Firstly, ‘Jumbo Yellow’, a flower with broad, recurved tepals. (‘Y297’ from the late Nick Primich). The diameter of the flowers is 10 cm. (Figure 1). ‘Jumbo Yellow’ was used as the pollen parent.

Secondly, ‘Four Marys’, a small, open, narrow tepal flower. The exciting feature of this flower is the colour. This plant was used as the berry parent. The tepals open white and then with time a pink blush develops, which darkens to a magenta colour. In addition to this there is evidence of a versicolour pattern on the flowers. (Figure 2). The ‘Four Marys’ plant used in this hybridising was obtained from Margot McNeil in 2003.

3. Flower colours of the first cross – F1

The first cross produced orange and yellow flowers, nothing resembling the pale colours of ‘Four Marys’ parent.

I then proceeded to use the F1 orange and F1 yellow plants in sibling crossings. I also used the ‘Four Marys’ as a pollen parent in some of the crosses. The various crosses may be seen in Table 1 below. (See pages 26 & 27).

Figure 1. A typical ‘Jumbo Yellow’ flower. Recurving, overlapping, broad tepals.

Figure 2. The 'Four Marys' used in this experiment, early in its flowering cycle, with open flowers, narrow tepals and evidence of a versicolour pattern.

Figure 3. One of my best examples of the 'Paljas Magic' 'Cultivar Group' – 'PM 2', full flowers with broad, recurved tepals which have a pink infusion on a white background.

Table 1. Key: 'PM' -'Paljas Magic' F1 and F2 results. Abbreviation keys as indicated on the pots: 4 = 4 Marys; o4 – orange split for 4M, yo4 – orange with a yellow face – split for 4M, po4 – a light orange split for 4M, y4 – a yellow flower split for 4M.

Plant	Berry plant F1 - colour with 4 Marys' genes	Pollen plant F1 - colour with 4 Marys' genes	F2 sibling pot - codes based on F1 crosses	F2 flower shape outcome	F2 flower colour outcome
PM 1	Light orange	Yellow	po4 X y4	Full, broad tepals & slight recurving	Pink tips, white centre
PM 2	Orange	Yellow	o4 X y4	Full, broad tepals & recurving	Pink tips, white centre
PM 3	Orange	Yellow	o4 X y4	Full, broad tepals & slight recurving	Light pink tips
PM 4	Orange	Yellow	o4 X y4	Full, broad tepals & slight recurving	White, blush pink - light green centre
PM 5	Yellow	Yellow	y4 X y4	Full, broad tepals & slight recurving	White-yellow, pink blush
PM 6	Orange	Yellow	o4 X y4	Full, open & broad tepals	Pink spots white centre, blush red tips
PM 7	Yellow face orange	Yellow	yo4 X y4	Open, V shape & broad tepals	Strong versi, white pinkish centre
PM 8	Orange	Yellow	o4 X y4	Open, broad tepals	Light pink tips, early - light green face
PM 9	Orange	Yellow	o4 X y4	Open, broad tepals	Pink tips & versi
PM 10	Orange	Yellow	o4 X y4	Open, narrow tepals	Blush pink, early - light green face
PM 11	Yellow	4 Marys	y4 X 4	Open, narrow tepals	Dark pink tips
PM 12	Yellow face orange	Yellow	yo4 X y4	Open, broad tepals, recurving	Pink tips, early - light green face
PM 13	Orange	Yellow	o4 X y4	Open, narrow tepals, recurving	Strong blush to pink/ red
PM 14	Orange	Yellow	o4 X y4	Open, narrow tepals	Blush pink/ red & versi
PM 15	Orange	Yellow	o4 X y4	Open, V shape, narrow tepals	Very light pink blush
PM 16	Orange	Yellow	o4 X y4	Open, broad tepals & slight recurve	Light yellow, pink blush & versi

Plant	Berry plant F1 - colour with 4 Marys' genes	Pollen plant F1 - colour with 4 Marys' genes	F2 sibling pot - codes based on F1 crosses	F2 flower shape outcome	F2 flower colour outcome
PM 17	Orange	Yellow	o4 X y4	Open, broad tepals	Blush pink/ red & versi
PM 18	Orange	Yellow	o4 X y4	Open, broad tepals, slight recurving	Blush pink, early - light green face
PM 19	Light orange	Yellow	po4 X y4	Full, open & broad tepalds, recurving	Strong blush to dark pink/ red
PM 20	Orange	Yellow	o4 X y4	Full, broad tepals, slight recurving	Light pink versi
PM 21	Orange	Yellow	o4 X y4	Open, full & broad tepals, V shape	Light pink tips & versi
PM 22	Orange	Yellow	o4 X y4	Open, narrow tepals, slight recurving	Clean quality pink tips & versi
PM 23	Yellow	Yellow	y4 X y4	Open, broad tepals, slight recurving	Light pink tone, light versi
PM 24	Orange	Yellow	o4 X y4	Open, broad tepals, slight recurving	Light pink tone, light versi
PM 25	Orange	Yellow	o4 X y4	Open, broad tepals, slight recurving	Light pink tone, light versi
PM 26	Orange	Yellow	o4 X y4	Open, narrow tepals, slight recurving	Blush pink & versi, light green
PM 27	Orange	Yellow	o4 X y4	Open, narrow tepals, slight recurving	Blush light to darker pink tones
PM 28	Yellow face orange	4 Marys	yo4 X 4	Full, broad tepals	Yellow, broad leaf plant

4. The resulting flower colour and shape of the F2 generation

Of the almost forty flowered seedlings, about 70 percent had variations of the original 'Four Marys' colouring. There was a large variation in the colours and flower shapes. (Table 1). Except for plant 'PM – 28', I decided to discontinue with further breeding of any yellow or orange flowering plants of the F2 generation. Of the 27 results the best example I have of my ideal, is the 'MP2' plant flower. (Figure 3). The flowers are full, recurved, with broad tepals and they have a white colour as a background with pink tips that develop with th maturation of the flower. The flower size varies between 7 and 8 cm. in diameter.

The resultant variation of the F2 plants and their parents are show in Table 1 below. 'PM' 28 is one of the results of the F2 generation. This plant has broad leaves with a yellow flower. I have decided to continue with this plant in further breeding.


1


2


3


4


5


6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11


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23


24

Figure 4. Tile compilation of 'Paljas Magic' 'Strain' flowers, no's 1 to 27 displaying colour and shape variation. Number 28 has a yellow flower with broad leaves.

5. 'Paljas Magic' 'Cultivar Group' colours and flower forms

The 'Paljas Magic' 'Cultivar Group' flowers start out as white. This white colour starts to blush with time resulting in various pink tones. (Figure 4). The flower colour variation of the 'strain' may be broadly divided into slight pink blushing to pronounced blushing. Examples of the light pink tones may be seen in the flowers illustrated above: 1, 2,3,9,11,14 and 22 (Figure 4).

Examples of the pronounced blushing varieties, some with red colouring, may be seen in number 19. (Figure 4). Additional flowers with a similar strong blush are seen in numbers 13 and 14. (Figure 4).

Flowers displaying the versicolour pattern of the 'Paljas Magic' 'Cultivar Group' are represented by numbers 7, 16, 24 and 25. (Figure 4). The most striking versicolour is number 7.

The full, broader tepal form is evident in numbers 1,2,3,4,5,20 and 21. (Figure 4).

6. Conclusions

'Jumbo Yellow' crossed with 'Four Marys' produced excellent results.

- Two clivia generations were required to produce a successful outcome. A new strain of plants was developed, named 'Paljas Magic' 'strain'. (Paljas = charm, magic or potion). The variation in the flower colours achieved were truly charming!
- Flowers are white/yellow blushing with pink tones, but there are examples of flowers darker blushing with red. Good examples of a versicolour pattern are also evident. The evidence of flowers with broader, recurved

Figure 5. Strong blushing characteristics of 'Paljas Magic' 'Cultivar Group', varying from a pale pink colour shown in the flowers of the lower umbel at an early stage, to red colours at a later stage shown in the flowers of the upper umbel.

Figure 6. Prominent versicolour in one of the 'Paljas Magic' 'Cultivar Group'.

tepals in some of the flowers is a far superior form than the original 'Four Marys' flower used in this crossing.

The flower colours and shapes of the F2 generation have achieved positive results. My aim is to continue breeding with selected plants of the 'Paljas Magic' 'strain'. To further improve the flower size and shape, I will backcross the 'Paljas Magic' 'strain' to my 'Jumbo Yellow', and hopefully continue to improve the flower forms.

Cape Town
SOUTH AFRICA

Clivia Society

Clivia
INTERNATIONAL CONFERENCE

2 - 4 OCTOBER 2023 • infocliviasociety@gmail.com

- 27 - 29 September 2023
  Guided tour to the last of the Namaqualand spring flowers and succulents
- 30 September & 1 October 2023
  Cape Clivia Club Show and visits to growers and tourist attractions
- 4 - 6 October 2023
  Guided *Clivia mirabilis* habitat tour (a little early for flower spikes to open)

PHOTOGRAPHIC COMPETITION 2022

INTRODUCTION

Glynn Middlewick

An impressive number of superb photographs were submitted this year for the Clivia Society Photographic Competition.

A big thank you to all participants and congratulations to the winners of the various classes.

The judges this year were James Haxton, Claude Felbert and Ian Coates. Whatever final decisions the judges make, someone will be unhappy! A big thank you to the three of them for their time and effort. Some of the images submitted were of a small size and were difficult to assess. The images submitted should be at least 500Kb, but not to exceed 2MB. This is a photgraphic competition, so the quality of the photographs is the most important aspect. The beauty of the subject will no doubt complement the photograph!

The top photographs this year were difficult to place. After careful consideration and re-assessment, the decision was made to award the winning photographs to be shared by Cora de Kock and Carrie Kruger. The third place was also shared by the same two entrants. Carrie Kruger regularly features in the winning categories of the Photographic competition. This year provided us with a new name amongst the winners, that of Cora de Kock.

In addition to the overall winners which were all in the miniata class, the top three positions in the other classes were:

Single flower class – Wanda Grunwald, Carrie Kruger, Johan Jooste

Species class – Johan Jooste, Carrie Kruger, Johan Jooste

Interspecific class – Carrie Kruger, Karel Stanz, Carrie Kruger

Artistic class – Karel Stanz, Carrie Kruger, Carrie Kruger

The winning positions in the various classes may be found in the images that follow. No habitat entries were received.

PHOTOGRAPHIC ENTRIES

MINIATA CLASS

First Place – Cora de Kock shared with Carrie Kruger

Miniata Class – First place tie – Cora de Kock

Miniata Class – First place tie – Carrie Kruger

Miniata Class – Third place tie – Carrie Kruger

Miniata Class – Third place tie - Cora de Kock

Miniata Class 5th place – Johan Jooste

Miniata Class 6th position – Karel Stanz

Miniata Class 7th position – Karel Stanz

ARTISTIC

Artistic class- First – Karel Stanz

Artistic class – 2nd – Carrie Kruger

Above: Artistic Class – third – Carrie Kruger

Left: Artistic class – 4th – Carrie Kruger

Above: Artistic class – 5th place – Anzette Snijders

Below: Artistic Class – 6th place – Andrew Kajewsky

Artistic Class – 7th place – Andrew and Pauline Kajewski

SINGLE FLOWER

Single flower class – 1st – Wanda Grunwald

Single flower class – 2nd – Carrie Kruger

Single flower class – 3rd – Johan Jooste

Single flower class – 4th – Johan Jooste

Single flower class – 5th – Andrew and Pauline Kajewsky

INTERSPECIFIC CLASS

Interspecific class – 1st place – Carrie Kruger

Interspecific Class – second place – Karel Stanz

Interspecific class – 3rd place – Carrie Kruger

Interspecific class – 4th place – Carrie Kruger

SPECIES CLASS

Species class – 1st – Johan Jooste

Species class – 2nd place – Carrie Kruger

Species Class – 3rd place – Johan Jooste

Species – 4th place - Rudi Koekemoer

ENTRIES INTO PHOTOGRAPHIC COMPETITION

Andrew Kajewsky – Interspecific category

Right:
Anzette Snijders –
miniata category

Below:
Cora de Kock –
miniata category

Left: Cora de Kock – interspecific category

Below: Dawie van Heerden – Single flower category

Dawie van Heerden – Single Flower Category

Dawie van Heerden – Miniata category

Dawie van Heerden – Interspecific category

Dawie van Heerden – Single flower category

Above:
Ian Duncalf
– Miniata
category

Right:
Jan Schmidt
– Miniata
category

Above: Johan Jooste – Interspecific category

Left: Johan Jooste – Miniata category

Karel Stanz – Miniata category

Left: Karel Stanz – Single flower category

Below: Karel Stanz – Art category

Right: Kobus van Schoor – Minata category

Below: Kobus van Schoor – Art category

Mike Riska – interspecific category

Mike Riska – Interspecific category

Mike Riska – Miniata category

Mike Riska – Miniata category

Right:
Rudi Koekemoer – Miniata category

Below:
Wanda Grunwald – Single flower

Wanda Grunwald – Miniata category

Right: Carrie Kruger – Single flower category

Below: Andrew Kajewsky – Art category

THE CLIVIA SOCIETY: MANAGEMENT DETAILS

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