

NEW ZEALAND
CLIVIA CLUB INC



Nz CLIVIA CLUB INC

NEWZLETTER

Volume 7.1 Summer 2009

Clivia Tour 2009: 2nd October to 6th October 2009.

Based on the success of our KiwiClivia 2008 Tour, we recognise many of our members live outside Auckland so we are looking at a Tour of the main Clivia places of note within the Auckland Province for our members. We envisage this as a 3 day event that starts off with a Welcome Dinner on the Friday before our Show. Saturday is the Show then on the Sunday and Monday we will visit great Clivia Gardens and people. Accommodation and transport will be part of a package arrangement. Costs are yet to be stated and the more people attend, the cheaper it is. We are looking at 20 to 30 people to make this an exciting Clivia group.

To register your interest for further information: email – dianah@edgeofeden.co.nz or write 13 Wickstead Place, Massey East, 0614.

Unexpected Gem From The Forest

At least 15 years ago, a woman who lived just around the corner from us and whose property backs onto the same forested area as ours, threw out her clivia plants – into the forest. She told me that they didn't flower for long enough each year. I eagerly gathered a few of them up and planted them in my garden under a deciduous magnolia. In due course they flowered – just ordinary old orange with yellow centres. However, one of the throw-outs was just a tiny 50mm root with a 50mm leaf growing from its middle. I felt sorry for it and planted it too amongst the ground-cover pine bark under the magnolia. After a couple of years it hadn't changed at all. It remained green but still with only one leaf. Then it started growing an extra leaf every year. After it reached a grand total of five leaves I forgot all about it. Then suddenly this year I noticed that it had quite a few leaves and was pushing up a peduncle. I dug it up to put in a pot and found that the roots were very long and had spread under the pine bark but on top of the weed matting underneath. I rolled up the roots and it fitted in a 200mm pot without problem. It flowered soon after and rewarded me with beautiful green-centred flowers.

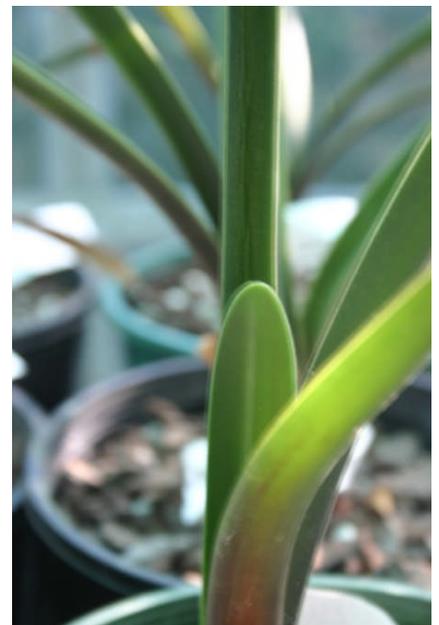
The first picture is the first flower taken on 29 November 2008 and the second is the last flower taken on 19 December 2008

I find it fascinating that the colouration can be so different on 2 blooms from the same peduncle. I have pollinated it with the beautiful yellow Murray Gow kindly gave me as a seedling back in 2004. Next year I might try selfing it.

Dominic Toon

New Mirabilis Leaves

For those people who are waiting on their Clivia Mirabilis plants, it shouldn't be too long before the plants are out of Quarantine, they have finally started to show new leaf growth!



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Clivias in the Subtropical Landscape

By David Olsen

There is nowadays a great variety of foliage available for the hardy subtropical garden – multicoloured bromeliads, lush looking natives, iconic astelias and collospermums, hardy heliconias and vireyas not to mention the new clivia flower colours and leaf shapes.

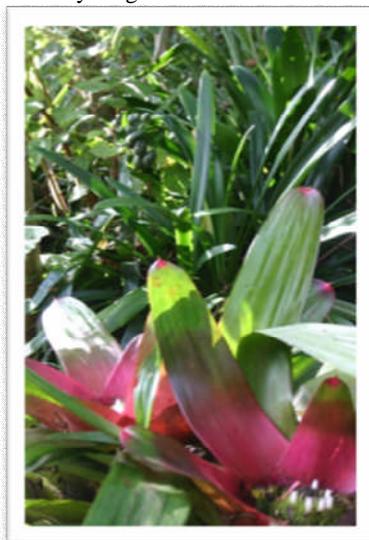
The gardening artist has more colours for his or her subtropical palette and can let their imagination run riot, trying out new combinations of colours and shapes. For example, I might ask myself what could I put with my Yellow x Alick's Peach? I could contrast it with the blue of a taro leaf and the red/pink of a large bromeliad.



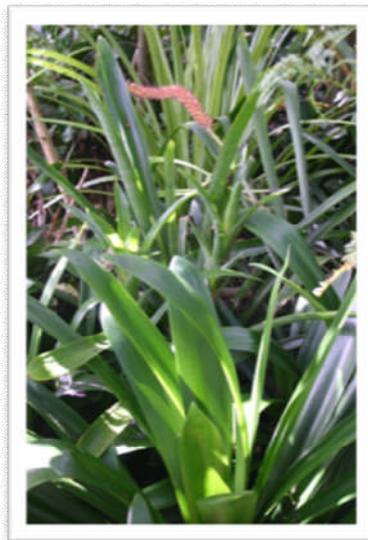
Of course there are pitfalls along the creative path. What looks great in the imagination may turn out to be drab in reality. Many's the time I have been driving along the road and cringed at the sight of a row of clivias planted in full sun looking bleached and insect-chewed. No doubt someone has thought clivias have big green leaves and will look good there, or will fill up the space nicely - and haven't known about, or considered the shade requirement.

Clivias are by and large a dry shade plant, although where I live on the North Shore of Auckland they are often a wet shade plant, due to the amount of winter and spring rain we get. Fortunately I have plenty of steep clay banks to plant my clivias on, where the water flows swiftly downhill.

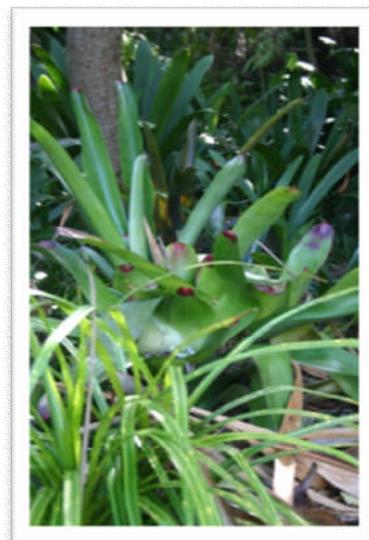
So, how does one reconcile the differing requirements of plants when trying to achieve a plant combination? Take my example, how do you marry Taro (wet feet, full to part sun), Bromeliad (good drainage, full to part sun) with Clivia (shade, good drainage). One way is through the layering of plants in the landscape using banks, small mounds and depressions to achieve closeness of plants and the creation of small vistas taking advantage of the perspectives created by this layering.



Layering example – bromeliad in the light, clivia in the shade, south facing slope.



South facing shade, clivia in the foreground, green bromeliad further up the bank, forest astelia at rear.



More layering – kie-kie, then bromeliad, clivia further back in the shade.

A vista could be created as you are walking along a curving path in your garden. At the end of the path you see a peach clivia in flower. On your left in the middle distance is a red-pink bromeliad. Almost brushing you as you pass it is a blue-green taro. Just then, the colours come together in your mind's eye, combining with the sound of the birds and the insects and the sunlight on the path to give a still moment of pure pleasure. Of such moments is the magic of the garden born.



THE PROPER USE OF THE DESCRIPTIONS "GROUP 1" AND "GROUP 2" FOR CLIVIA

Until the early 1990's the best known source of yellow flowered *C. miniata* was Cynthia Giddy. She sold only offsets, not seed, of her "Giddy Natal Yellow" because it was self sterile and when crossed with other yellows produced only seedlings which had pigmented stems and flowered orange.

Nick Primich, however, had been corresponding with Bill Morris in Australia and with Yoshikazu Nakamura in Japan and with Kew who were all breeding yellow flowered *C. miniata* from seed. He founded the Clivia Club (now the Clivia Society) as an international group of Clivia enthusiasts and it held its first international conference in Pretoria in 1994.

A Clivia Show was included in the Conference and the late Fred Gibello, then from the Southern Cape, showed a yellow *C. miniata* which won first prize in its class. He complained, however, that it was self sterile and was advised to pollinate it with other yellows, but again only pigmented seedlings resulted.

Fred had obtained his plant from a Mrs Höll at Swellendam near Cape Town. Her husband had been Postmaster at Pietermaritzburg in Kwa-Zulu Natal before he retired to Swellendam. This turned out to be a different yellow from Cynthia's 'Natal Yellow' because when Wessel Lotter in Pretoria obtained Höll Yellow pollen from Fred in 1997 and used it on 'Natal Yellow' only green stemmed, yellow flowered seedlings were produced. He wrote this up in articles in the October 1997 and January 1998 Newsletters of the Clivia Society, calling Natal Yellow "Natal 'A'" and 'Höll Yellow' "Natal 'B'".

Wessel's careful research (supported by his brother Chris at Hermanus) thus made the important discovery that there were at least two different "Groups" of yellow flowered clivia – which Wessel called "true yellow", being Eshowe, Kewensis, Vico and the yellows being bred in Australia, on the one hand, and "par yellow" being his Natal "A" and "B", on the other. The difference was that true yellows crossed with one another produce only green stemmed, yellow flowered seedlings as do par yellows crossed with one another. But if you cross a true yellow and a par yellow only pigmented, orange flowered seedlings result.

A layman's explanation for a clivia with a yellow flower is that all clivia have pairs of genes "zipped" together in strings called chromosomes. One of every pair is inherited from each parent and on successful pollination ("meiosis") the genes from each parent pair up to form the seedling's chromosomes. In a clivia with normal genes the flowers are orange because their dominant pigment producing chemical is anthocyanin.

However, sometimes genes are defective ("mutated"), but if only one of a pair is mutated the normal gene will dominate and the flowers will remain orange. But if both of a pair are mutated they will block the production of anthocyanin in the flower and it will be yellow.

Yellow flowers are therefore brought about by a defective gene from each parent pairing up on Meiosis, but both parents must then have that defective gene at the same place ("locus") in the "zip" of their chromosomes.

The reason why "true yellows" and "par yellows" produce orange flowered seedlings when crossed is that each has its pair of defective genes at a different place on its chromosome "zip" so that the seedling does inherit one defective gene from each parent but each at a different place on the "zip".

The other genes inherited from the each parent at those places on their "zip" are normal. They pair up with the abnormal genes so that at those two places on the "zip" you have "mixed" pairs and the normal one dominates and allows the anthocyanin through so that the flower is orange.

Wessel's "true yellow" has subsequently become known as a "Group 1 Yellow" and his "par yellow" as "Group 2 Yellow".

But how far can those descriptions be taken? Wessel has set the parameters for yellows – to qualify for inclusion within either of those Groups a plant must breed true with other members of that Group – i.e. produce only green stemmed, yellow flowered seedlings when crossed with one another.

Thus the Transkei Yellows – Dwesa, Floradale Transkei Yellow, Centani Yellow and Smith's Yellow have all been found to be Group 2 because when interbred or when bred with Natal "A" or "B" only green stemmed, yellow flowered seedlings are produced.

The very rare 'Butter'(said to originate in the KZN habitat) was also found to be Group 2 and is the breeding source of the deep yellow Group 2 hybrids such as 'Pat's Gold' and 'Golden Fleece'.

On the other hand other yellows such as Oribi Gorge Yellow and Val Thurston's Yellows from Ndedwe and Msubo in KZN do not qualify as either Group 1 or 2 because they do not fulfill those criteria.

Some Group 2 yellows can be identified by red marking of the flowers when damaged, by a pinprick, for example. This is typical of all the Transkei Yellows and is very marked in 'Cynthia's Best' and to a lesser extent in the Natal Yellow which has leaf die back. (see Fred van Niekerk's article in Yearbook 7 p. 67). However, this characteristic alone does not qualify a yellow as "Group 2" unless, when interbred with known Group 2 Yellows, it produces only green stemmed, yellow flowered seedlings.

The Transkei plants are also different in that they are not self sterile, whereas, as far as we know, all the KZN Group 2 yellows are self sterile.

Now while those are the criteria for grouping yellows, one reads often of references to certain peach flowered clivia being "Group 1 or Group 2", but this is being done without any criteria being laid down, as Wessel did for yellows.

The only peach that I know which, when selfed or interbred, produces only green stemmed, peach flowered seedlings is the original habitat 'Chubb Peach'. If crossed with a Group 1 Yellow all the seedlings will also be green stemmed and peach flowered, the exact colour and form of the flower depending on the particular cross.

This happens because the original 'Chubb Peach' has a pair of partly defective genes (called "leaky" genes by Bill Morris in his article in Clivia Yearbook 4 p.27) at the same locus as the wholly defective pair in Group 1 Yellows. While in Group 1 Yellows that wholly defective pair blocks the production of anthocyanin in the flowers so that they are yellow, in the original 'Chubb Peach' the partly defective pair let some anthocyanins through and the flower is peach coloured.

When an original 'Chubb Peach' is crossed with a Group 1 Yellow, the seedlings all inherit one such "peach" gene from 'Chubb Peach' and one wholly defective "yellow" gene from the Group 1 yellow which pair up at the "Group 1" locus on the "zip". Just as normal genes are dominant and the flower is orange even when they are paired up with defective "yellow" genes, the partly defective pair of genes in 'Chubb Peach' are also dominant when one of them pairs up with a wholly defective "yellow" gene. So the flower is peach coloured.

However, while all the F1 offspring of a 'Chubb Peach' x Group 1 Yellow cross will be peach flowered, only one of the pair of genes at the "Group 1" locus on their "Zip" will be partly defective ("peach") – the other will be wholly defective (yellow). In other words, they will be "split for yellow" and when sibling crossed or selfed or crossed with Group 1 Yellows will produce only green stemmed seedlings but they will flower either yellow or peach depending on which genes pair up at their "Group 1" locus. In some both of the pair will be "yellow" and therefore yellow flowered; in others there will be one of each so that they will flower peach but be "split for yellow; in others both will be "peach", meaning that you have successfully back-bred the equivalent of an "original 'Chubb Peach'".

We know of other peaches such as 'Lotter Peach', 'de Villiers Variegated Peach' and 'Gail's Peach' which when selfed or crossed with one another produce only green stemmed offspring, but these offspring can be peach or yellow flowered. They will also do so if you cross them with a Group 1 yellow.

We know that 'de Villiers Variegated Peach' was bred using 'Chubb Peach' and that 'Lotter Peach' was bred by crossing a Group 1 Yellow with a peach, but the specific peach used was not recorded. The origin of 'Gail's Peach' is unknown. 'Howick Yellow' (a.k.a. 'Mare's Yellow') has also occasionally produced peach coloured flowers.

The specific colour peach in the seedling as well as the qualities of the flower will differ depending on the parents selected.

All of these peaches produce only pigmented stem, orange flowered seedlings when crossed with Group 2 yellows, for the same reason as Group 1 x 2 Yellows do.

However, when any of them is crossed with an original 'Chubb Peach' all the seedlings will be green stemmed and have peach coloured flowers.

The only peach which satisfies the criteria applied by Wessel Lotter when describing Group 1 and 2 Yellows is therefore the original habitat 'Chubb Peach' – its offspring will always be green stemmed and peach flowered when crossed with any Group 1 Yellow or with any of the other peaches which are split for group 1 yellow.

There are also many oranges and pastels which are "split" for Group 1 Yellow and some of the best yellows have been bred by selfing those or crossing them with Group 1 Yellows. Some others, like 'Floradale Apricot' must also have leaky genes at the Group 1 locus because it is not orange and produces new colours when crossed with Group 1 Yellow or any of the peaches referred to above.

"Group 2 Peach" is often referred to. What are they? Do they, as a group, when interbred only produce green stemmed seedlings with peach coloured flowers and what happens if you cross them with Group 2 Yellows? I know of no proven criteria, therefore, justifying a description of "Group 2 Peach" for peach flowered clivia. In fact I have never yet come across a peach flowered F1 seedling bred with a Group 2 Yellow.

Exciting new colours bred from a Group 2 Yellow cross, except the green flowers referred to below, are not as common. Sean Chubb has bred good pastels, apricots and pinky pastels such as 'Soft Touch' (but no peaches) by crossing Natal Yellow with 'Naude Peach'. Also 'Gladys Blackbeard' has bred acceptable pastels when crossed with Höll Yellow. 'Gladys Blackbeard' is a pinky pastel of unknown breeding/origin named by Gordon McNeil for Gladys Blackbeard, the doyen of South African clivia breeders going back to the 1930's - see also John van der Linde's article on p.17 of Yearbook 6.

It must be remembered, however, that Group 2 Yellows are not yet widely held and hopefully, in time, new breeding will find other plants that have defective or leaky genes at the Group 2 locus.

Thus, what has come to the fore in recent years, is Group 2 Greens, such as 'Hirao' and green centred yellows. These comply with the criteria that, when interbred or when bred with Group 2 Yellows, they produce only green stemmed seedlings but they will flower either yellow or yellow with green throats or green. Therefore, they too "belong in Group 2" because their defective genes are at the Group 2 locus, but the flower colour of their offspring is uncertain.

Hirao is in fact an F2 bred by sibling crossing seedlings of (Bronze x Group 2 Yellow). In time we may well still get Group 1 greens bred from Group 1 Yellows with green throats.

I would suggest, therefore, that until there are clear criteria for "grouping" other clivia flower colours such as Wessel has done for some yellows, only the original habitat 'Chubb Peach' qualifies as a "Group 1 Peach"

To sum up, Wessel Lotter's careful research has identified exact criteria by which two "groups" of yellow flowered clivia can be identified, but there are yellow flowered clivia which fall outside those groups, probably because their defective genes are situated at different loci on the chromosome .

The original habitat 'Chubb Peach', clearly qualifies as a "Group 1 Peach" on the basis that its offspring when selfed or crossed with a group 1 yellow will always be green stemmed and flower peach.

There are other peaches and pastels such as 'Floradale Apricot' which also do not revert to orange when crossed with such a Group 1 yellow or peach and could therefore be characterised as "belonging in Group 1" on the basis that they must have defective genes resulting in colours other than normal orange at the same locus as Group 1 yellows.

The same criteria could be applied to the Group 2 yellow locus, e.g. 'Naude Peach' and 'Gladys Blackbeard' which "belong in Group 2"

because their defective genes appear to be at the same locus as those in "Group 2 Yellows".

However, there are many loci on the chromosome and other clones such as Ndedwe Yellows, Oribi Gorge Yellow, Cameron Peach, Tipperary Peach and Victorian Peach may each have their defective genes at a different locus resulting in colours different from orange. The same may apply to the specific genes which result in red flowers. This may explain why it seems that reds and also other peaches such as Cameron and Tipperary must be line bred to reproduce their colours. It has been reported however that the 'Cameron', Tipperary' and 'Welgemoed' peaches can produce peach flowered seedlings when crossed. This is not surprising as they all come from Tipperary stock. However, as Chris Welgemoed has shown us, a whole variety of pinks, pastels, green throats etc. have also been bred from line breeding and crossing them and, although they are not Group 1 or 2, they are fast qualifying for their own separate Group status as it appears that they never revert to normal orange.

I am grateful to Sean Chubb and John van der Linde for reviewing and correcting an earlier draft of this article. No doubt it is all "old hat" to experienced breeders but we hope it will help to stimulate new breeding and assist others when selecting seed and seedlings. However, comments and corrections by those more experienced and better versed in botany would be helpful to us all.

Mick Dower, Cape Town, December, 2008
(Reproduced with kind permission from the Cape Clivia Club)



Kirstenbosch
Yellow
(group 1)



Natal Yellow
(group 2)



Chubb's Peach
&
Vico Yellow
(group 1)



Cameron's Peach
(a non-group true
breeding peach)

Members Garden – This is the garden of Ann Roughton who lives in Teal Bay on the east coast of Northland near Russell.



GROWER INFORMATION

Gardenza (Gardens & Nursery)

Owner: David Brundell

Location: Glenbrook Beach near Waiuku, Franklin District

Phone: (09) 235 3834

Email: david@gardenza.co.nz

Website: www.gardenza.co.nz

Gardenza, the nursery and associated gardens, specialises in exotic flowering bulbous plants especially clivia. We also produce many other amaryllids including the fireball lily from South Africa as well as South American wild delights such as species hippeastrum. We also grow many types of unusual aroids and an array of zinzibars such as heliconia, canna and the outrageous lotus banana. If this is not enough we offer a few more subtropical delights that may tickle your fancy.

I am the privileged owner of truly clonal Vico Yellow clivia. The late Sir Peter Smithers gave me an offset from this famous variety about twenty years ago. With Vico Yellow, a stunning range of clivia has been developed that include Honey Moon, Heaven Scent, Apricot Sun and Full Moon.

My plants produced in the nursery are also growing in the out-of-the-ordinary landscaped garden, which you are welcome to visit by appointment.

I sell plants and seeds internationally. Please feel free to contact me via email, post, telephone or our website.

Alick's Clivia

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Alick & Frances McLeman

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Phone (09) 5213062 Email: clivia@xtra.co.nz

website www.clivia.net.nz

Photo site: <http://www.flickr.com/photos/alicksclivia/>

I am primarily a hobbyist who has been growing and collecting clivia since the early 1990s. I have an extensive collection including all species of clivia. Offsets from my collection plants can be purchased, and I publish an international seed catalogue in March each year. Enquiries can be addressed by mail, email or telephone. Visitors are welcome by appointment and it is not necessary to purchase plants when you visit.



Parfait (F2 Cyrtanthiflora X Natal Yellow)
Seedling.

Dr Keith Hammett

Owner: Keith Hammett

Location: 488c, Don Buck Road, Massey, Auckland 0614, New Zealand

Telephone: (09) 833 9453

Fax: (09) 833 54990

Email: khammett@clear.net.nz

Website: drkeithhammett.co.nz

Keith Hammett is first and foremost a scientist/plant breeder working with a number of disparate genera. He became interested in *Clivia*, many years ago and has established the largest and most diverse collection in New Zealand. The bulk of the collection is planted outside under trees.

Plants have been sourced both from collections around the world as well as from habitat in South Africa. The collection has supported fundamental research into the genus, leading to a better understanding of both its chromosome and pigment systems as well as the establishment of *C. robusta* as a separate species.

Breeding is ongoing and hybrids between the various species are a special interest.

Large-scale seed production is undertaken for the nursery industry and plants are available within New Zealand. As the collection matures it is becoming possible to offer limited numbers of named cultivars propagated vegetatively as well as high quality seed raised plants.

AN INTERESTING CLIVIA

The photos of this interesting plant belonging to Peet van der Walt of the Northern Clivia Club were posted on the enthusiasts group by Gerda Gers of Pretoria. Some informed comment on the phenomenon was:

Jim Shields, Indiana: My guess is that the parents were yellow plus orange or mixed group 1 X group 2. It looks as if a somatic mutation occurred in the embryo or possibly in the apical meristem of this particular plant, inactivating one of the anthocyanin genes so that one side of the plant is orange and the other yellow. The parentage just about has to be mixed yellow orange or group 1 X group 2 yellows because the statistical chances of a double mutation in one cell inactivating both alleles in a single gene are too remote.

Breeding with the all-yellow flowers should yield yellow flowered seedlings if selfed or crossed with the correct group yellow. Crossing one of the yellow flowers with one of the orange flowers should product 50% yellows and 50% oranges, assuming that the original plant and the orange half is heterozygous for anthocyanin blockage (i.e., "split for yellow").

It will be interesting to see if this plant produces yellow, mixed, or orange flowers on future scapes.

Dr John Manning, South African National Biodiversity Institute: Fabulous! This is an example of what is termed a somatic mutant, which means that the mutation (in this case for albinism, or the loss of the orange pigmentation) took place in one of the vegetative cells of the floral apex. All cells derived from this particular cell thus lack the pigment, whereas those derived from adjacent cells that did not mutate have normal pigmentation.



What's Happening

AHC Open Day

21 March: Auckland Horticultural Centre, 990 Great North Road, Western Springs (Opposite Motions Road to Zoo) An open day promoting all the Gardening Clubs in Auckland with lots of displays and demonstrations including plant sales. We will be there, so call in and see us.

Gardener's Market

27/29 March: Auckland Botanical Gardens at Hill Rd, Manurewa are having a 3 day 'Manukau Garden Festival' On the Sunday there is a Gardeners Market with heaps of events. We will be there promoting Clivia and hope to see you.

Club Meeting

Wednesday 29th April 7.00pm – Discussion and slide show, plants for sale. Venue is the AHC Building, Great South Road, Western Springs.

Interspecific Day

May – July (date to be arranged)

Club Meeting

Wednesday 29th July 7.00pm – 'Hybridisation strategies for the hobbyist', a discussion with slides led by Alick McLeman. Venue is the AHC Building, Great South Road, Western Springs.

AGM

Saturday 22nd August 10.00am. A tour of Ian Baldick's 'Ten Thousand Flowered Garden' and Sausage Sizzle at Great South Road, Ramarama, is followed by the AGM at Joy Plants, 78 Jericho Road, Pukekohe East.

Tauranga Show

Sunday 27th September

Auckland Show

Saturday 3rd October at the Botanic Gardens, Hill Road, Manurewa.



Ngome Yellow from Ian Baldick's garden