Club

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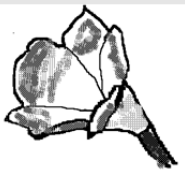

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Volume 2 Number Three July 1993

Dear Mr. Primich,

Happy New Year. Thank you for your letter and for the vol.1 No.3 newsletter, which I received the day after I posted my last letter to you.I enclose $10 by way of subscription.Since I last wrote to you I have received some seeds from Mr. Nakamura in Japan. These are germinating nicely and it will be interesting to see how they develop. In your letter you mentioned that you would be sending a small parcel of the Kevin Walters seed, I have to tell you that, to date, I have not received them, I tell you this because my experience of the postal service is not particularly good and if they have gone missing I will ask the post office to look for them. You also mentioned putting me down on your mailing list for seed to ripen in July '93. These would be much appreciated.

Now as to the plants from Edinburgh, but first I should tell you a little about what I have to achieve. I am a member of the National Council for the Conservation of Plants and Garden, a grand title perhaps, but basically it sets out to promote the conservation of what we have got in plant life. This includes cultivars as well as species. To this end, public and private bodies register with the council, collections of a particular genus, family or subset of plants and maintain it for posterity! A number of conditions are made on the collection holder not the least of which is to allow public viewing, or by appointment members of the general public to view a collection. Holders are encouraged to propagate the material they hold.

In the longer term, I intend to register a collection of Clivia and with this in mind I wrote to the Royal Botanic Garden Edinburgh and the Royal Horticultural Society's Garden at Wisley (of which I am also a member) asking for help. Both have responded and as I write I am looking at two rather splendid plants of C.Nobilis one of which is about to flower, kindly supplied by the RHS Garden. These are large well established plants which were supplied bare rooted about six weeks ago. The plants from Edinburgh were offsets, also bare rooted and packed in sphagnum moss. When they arrived I found that many of the roots had been cut as had half the leaf length. It is winter here and freezing outside. We have only six hours light per day and even then it is heavily overcast most of the time, nevertheless the plants were potted up and given underheat. Happily these are beginning to show signs of growth. As I expected, the roots, having been damaged gradually rotted to some extent and during the rot it has not been easy. However I think I am beginning to reap the rewards of my effort. I will keep you informed as to the progress.

The Royal Botanic Garden in Edinburgh supplied me with roots of a Clivia named "Westonbirt Perfection" since they could not offer me a plant, they told me that they had heard that Clivias could be propagated from root cuttings. I have tried this and have found so far that only the tops of the root can be used. Roots that have been cut at the lower end rot even in a fairly open compost. I do have one or two roots left which are sound but so far no encouraging signs of life have been seen. Any Comment?

With regard to the named hybrids of Clivia which I have I will give you a detailed account with photographs as and when they flower. I think it is particularly important that we should form some kind of register of all known plants, and perhaps ultimately produce a booklet containing that information. If I can be of any help in this direction I will do what I can.

Yours
Carl Atkinson

CLIVIA: SOME PERSONAL OBSERVATIONS 1965-1989

With kind permission, this article is reprinted from IBSA Bulletin No.38 Feb. 1990

The genus Clivia, a pseudobulb of the family Amaryllidaceae, can be divided into three distinct species, those of an upright flowering habit - C. miniata, those of a pendulous flowering habit -C. gardenii and those of a pendulous habit which root upwards from their bulbous base thus forming a stem - C. caulescens. There are many varieties within all except C. caulescens species and numerous hybrids as the species readily cross.

C. miniata in most of its wild forms has orange flowers with fairly narrow petals. There is a naturally occurring yellow form, C.miniata flava, but this is relatively scarce as it is not self fertile. It will readily accept pollen from other C.plants, including yellows from a different parentage. Where both parents are flavas, I find all progeny are also. In other cases, the yellow is highly recessive. A true yellow can be detected even as a young seedling as it is the only miniata not to have magenta pigment on the reverse of the base of its leaves. The more prized cultivated forms have large broad petalled flowers and broad leaves.Colours vary from a full red to yellow. I have one variety, 'Cynthia', which is a distinct pale orange, most attractive and closer to a C.miniata flava that the common orange, it also has large broad flowers and a split pedicel giving two or three heads. This is not self fertile either. There is a variegated form, with cream or yellow/green striations along its leaves. This is not readily self fertile but can be pollinated by other C. and the seeds will reproduce the striations providing there is a good pale streak across the seed head. Variegated forms are also thrown up as sports occasionally by normal seeds. The variegation on my own plants has all grown out with age so I have not had a chance to make any interesting crosses. Gardenii. The pendulous flowering form.

Some also list C. nobilis as a separate species rather than a sub-species of gardenii. If so, then it is certainly very close to C.gardenii and I would differentiate it merely by its notable green tipped flowers since one of its popular names is the green tipped Clivia.

The number of flower heads and their size varies considerably for C.gardenii in the full range of C.miniata colours. The shape is also variable from long and slender to wide and open mouthed.
The definitive shape would appear to be between these two as most of the more extreme shaped flowers I have obtained as C.gardenii have not bred true suggesting they are in fact C.x cyrtanthiflora. Time alone will tell of how much of this is true. One distinctive variety, C. gardenii 'Retusa', has very coarsely toothed retuse leaves and bears flowers symmetrically drooping round its stem with a plentiful drip of nectar.

HYBRIDS - inter species. Usually grouped under the heading x cyrtanthiflora. However, so many crosses are possible, further division may be desirable. My experiences now total over a hundred flowering hybrids and results seem consistent with features repeatedly dominant or recessive.

C. miniata x 'nobilis'. Flowers are pendulous and sized between the parents.

The C.miniata x caulescens. As the nobilis cross but it retains caulescens rooting system.

C.miniata x gardenii. Flowers are upright and similar in colour to its miniata parent but of even larger size than that parent. Where the cross is made with the C.miniata the donor to any other species, the result if always pendulous with flowers

rather larger than their mother. Again, the C.caulescens rooting is dominant. C.caulescens, nobilis and gardenii all readily inter cross. They give variable offspring similar to their parents with the C. caulescens rooting being dominant.

Inter - Generic Crosses

I have tried many such crosses mostly around Amaryllidaceae with similar diploid values. The lack of success has been notable. I have obtained viable seed only from C.miniata x Amaryllis species and hybrid and from Cryptostephanus vansonii x C.cyrtanthiflora. The former are very possibly self induced pollinations as both plants have grown and flowered similar to their parents with the difference being merely in size. The Cryptostephanus cross, however, is distinct from both parents. It is still extremely small, although 3 years old, and I eagerly await its first flower. Historically, the only successful cross of which I am aware is that with Eucharis. I have never seen this or heard of its continuing existence.

Propagation

The certain way to obtain plants identical to their parent is to separate the offsets which appear after a few years. A few plants also divide their main stem. Tissue culture works but, having succeeded once after much failure, I decided to leave this to the professionals who can more readily obtain the correct culture media.

Another interesting method, which can also salvage lightly frosted plants, is to cut off all foliage just above the base. This base and root stock can then be cut into four or six pieces with each piece then cleaned to retain about three good roots. These pieces can then be potted up and will throw out side shoots fairly readily.

For hybridisation, seeds are of course used.

Sports

Some plants seem to sport fairly often. This mostly involves the number of petals (from four to eight) or the retention of chlorophyll in a petal. When viable seed is given, the first flowering often shows the effect of the sport to a lesser extent. Unfortunately, this appears to disappear in future flowerings.

I have tried various treatments with Colchicine and this has markedly slowed the growth rate in all cases. Whether this will effect the eventual flowering size remains to be seen.

Culture

In the UK, plants cannot be grown in the open. Being severely limited for space and being conscious of heating costs, I grow my current stock of some 200 plants in an insulated timber shed with fluorescent light for about 18 hours per day and electric heating. They survive well but I am sure they would prefer some fresh temperate air (So would I!)

My thanks must go to my many friends around the world who have corresponded and exchanged plants with me. Special mention should be made of my late friends Colin Pritchard, Gordon McNeil and Shuichi Hirao.

Ian Coates.

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Variegation

Variegation in plants is caused by damage to certain cells such that the cell loses its ability to produce chlorophyll. This loss may be total or partial in which case the variegation may vary from white to greenish yellow on a green background. The damage to the cell may be caused by a number of different agents including virus, chemicals, heat, radiation etc.

There has been a considerable amount of incorrect opinion quoted regarding variegation and viruses, the most extreme being that all variegation is caused by viral infection. Some variegated plants are virus infected and the virus is the cause of the variegation, however, these plants are in a minority and most regular variegation is not caused by viruses.

Viral variegation is characterised by the following:-

3. Irregular variegation with uneven spots and patches, or sometimes broken longitudinal lines that jump sideways in the leaf as well.
4. Often the variegation leads to necrotic (dead) areas.
5. The condition is infective. That is, sap or damaged tissue rubbed on unvariegated leaves usually causes the new plant to become variegated.

The commonest virus-caused variegation in horticultural plants grown for their variegation is found in the variegated abutilon. Most other variegated plants have regular variegations. These are usually parallel lines of white or yellow. There are however,some irregular variegates that are still not caused by a virus. These variegations cannot be passed from one plant to another by the transfer of sap or tissue. New shoots may, or may not reproduce the variegation depending on whether the new shoot originated from variegated or green tissue of the mother plant.

As a general rule variegated plants are less vigorous than all-green plants of the same type simply because there is less energy-absorbing food-producing (i.e.green) tissue for the same mass of plant. With very vigorous plants it may be difficult to observe the difference as both plants grow "well". It is easiest to observe in tropical or sub-tropical plants being grown in colder regions nearer the limit of their tolerance. Often a plain green type will survive and grow slowly while the corresponding variegated plant may not grow sufficiently each growing season to overcome its negative growth(loss of leaves, stem etc.) in winter and slowly goes backwards until it eventually succumbs. The difference is clearly seen in variegated clivias where a batch of variegated seedlings is observed. Those seedlings which are nearly totally green with only occasional thin yellow lines grow as well as ordinary clivias. However, as the variegation increases, vigour is approximately proportional to the percentage of green tissue. When a seedling has about fifty to fifty ratio of green to yellow tissue the plant can survive, but the growth rate is slow. At the stage when there is only a quarter of green tissue present,it becomes quite difficult to raise the plant to maturity. It is much more susceptible to poor conditions such as cold, wetness,loss of roots etc. They seldom survive the seedling stage. Totally yellow seedlings usually die before six months, living mainly off the food in the seed.

Variegated clivias with the same ratio of green tissue to yellow, say fifty/fifty, will do better where the variegation consists of thin bands, rather than where one half of the leaf is yellow, and the other half is green. In the latter case the wide yellow stripe is more susceptible to damage such as sunburn or bruising than the one with the numerous thin stripes. As the variegated tissue is in fact living parasitically off the green tissue it seems the cells of the narrow stripe type are better able to transfer food from the green cells which are closer in this case. Just as in the case of the broad stripe where the remote cells may get less food, and thus be weaker and more liable to necrosis.

It is unusual for variegated plants to be reproduced from seed. Most variegated plants arrive as mutations of normally green plants. An occasional shoot will suddenly develop a variegated leaf or leaves. Other times, one or more seedlings will appear out of a large number of normal seedlings. Yet continuous breeding from seed of variegated plants sometimes leads to a progressive increase in the percentage of variegated plants. Eventually a strain may develop which regularly produces variegated seedlings. This may be what has happened with clivia.

Bill Morris

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Information about the Bodnant Clivias

Clivias:- The genus and its history

Clivias come from the warm dry forests of Natal, in South Africa.

They are evergreen perennials, too tender to be grown outside in the U.K., but they make good house plants since they are tolerant of shade. They are ideally suited to a conservatory or greenhouse where the winter temperature can be maintained at 10 C/ 50 F. They prefer a well-drained loam/peat compost and need ample water during the growing season but drier conditions when resting in the late summer and autumn. They flower most freely when the roots are restricted, but they need annual top-dressing and feeding. The normal flowering period is from February to April.

Clivias are members of the family Amaryllidaceae, and were formerly known as Imantophyllums. They were first introduced into the United Kingdom in the early 19th century, and were subsequently re-named after the Duchess of Northumberland (d.1866), whose maiden name was Clive--she was the granddaughter of Lord Clive of India. It was in her garden that clivias first flowered in the United Kingdom.

There are 4 species, namely: C. miniata, C. nobilis, C. caulescens and C. gardenii as well as various varieties and crosses.

Clivia miniata is the best known of the species, and forms the basis of the Bodnant collection of hybrids. It is noted for its large, free-flowering fragrant flowers with their strong warm colours, and also for the robust clumps of dark green, strap-like arching leaves. The flowers have up to 20 flowers in a truss, and last for about a month.

The origin and development of the Bodnant collection of clivia

Sir George Holford of Westonbirt developed over many years a well known collection of clivias, using both C.miniata and C.nobilis to achieves a wide colour range, the hybrids between these species being known as C. x cyrtanthiflora. In 1924 Sir George gave to the second Lord Aberconway from his collection a small number of plants of superior form.

Between 1924 and 1930 the second Lord Aberconway and his Head Gardener, Mr. Frederick C. Puddle, carried out an extensive programme of selective breeding and hybridisation. The aim at first was to improve the red and salmon forms. However, the acquisition by about 1930 of a plant of the yellow flowered species, C. miniata var. citrina, enabled the breeding programme to be widened. The object of the breeding programme was not only to extend the range of colour but also to improve the size of the flower and the quality of petal.

Some large flowered yellow clivias were produced by crossing the salmon C.miniata with the yellow C.miniata var. citrina. Mr. Raffill of Kew also made such hybrids, for which he published the name Clivia x kewensis. In accordance with the Botanical Code, this name was also used for the Bodnant hybrids and the two named clones exhibited a C.x kewensis "Bodnant Variety" and C.x kewensis "Bodnant Yellow". No clonal names have been given to the other hybrids in the Bodnant collection.

By 1939 many crosses between carefully selected parents had been made---there had been considerably progress in the red and salmon shades, and a number of promising new yellow seedings had flowered. All the seedlings were ruthlessly selected, and only a few of the very best were retained.

The Second World War interrupted the breeding programme, but fortunately most of the clivias survived the War. Further selective breeding and hybridisation was resumed at Bodnant for the present Lord Aberconway by Mr. Charles Puddle.

All the clivias at Bodnant are the result of this breeding and selection programme. As a result, none of the original Holford clivias remain in the collection, although they formed the basis of the present collection of red and salmon forms.

Awards won by Bodnant clivias
The yellow clivias, which normally flower later than the pink ones and tended to be exhibited in late March, won a number of awards:-

In 1946 a good yellow form was given an Award of Merit by the R.H.S.This clone was named "Bodnant Variety".

In March 1949 a group of cut flowers from the Bodnant clivia collection was exhibited at the R.H.S. and received a Silver-Gilt Lindley Medal "for hybrid clivias raised at Bodnant".

A rather better yellow form "Bodnant Yellow", received in 1950 another Award of Merit, and in 1958 an F.C.C.

The Lord Aberconway, VMH
This exhibition in March 1993 is being mounted in honour of the forthcoming 80th birthday of the third Lord Aberconway, VMH.

Lord Aberconway as President of the Royal Horticultural Society from 1961 until 1984, when he retired and a appointed President Emeritus of the Society. He is a distinguished and enthusiastic horticulturist, with a particular love of rhododendrons, magnolias and camellia, and he continues to serve on the Society's Committee B. In addition he was appointed Commissioner General of the first International Garden Festival in Liverpool in 1984, and he has also been actively involved in the Garden Festivals at Stoke, Glasgow, Gateshead and Ebbw Vale. He has contributed to the advancement of horticulture in Britain in many ways, and like his father and grandmother has been awarded the Victoria Medal of Honour, the highest award made by the Royal Horticultural Society.

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Dear Nick

Thank you for your letter of 17.08.92, Clivia Club publications 1:2 and 1:3. and for the subscription notice dated 21st January 1993.

Yes, I am anxious to be a member and had intended writing much sooner. However, I was overtaken by our growing season. I have an interest in a diversity of genera in addition to Clivia.

I maintain an American bank account and can easily write you a cheque to cover subscriptions. Is this an acceptable form of payment for you? This time I enclose a $US20 note, which I happened to have and trust that it will reach you safely.

I would very much like to have publication 1:1 and issues subsequent to November 1992 to complete the set, I trust the enclosed money will cover these.

I am actively breeding Clivia and have been exchanging information and material with Yoshikazu Nakamura of Japan, who seems to have an extraordinary collection. I am impressed in the level of interest in Australia and indeed that country was my source of yellow Clivia, some years ago.

It is interesting to note that Nakamura obtained his collection from Dr Hirao. Hirao visited New Zealand not many years before he died and was instrumental in obtaining a source of a rare tree from Japan for me. With regard to tissue culture of Clivia, the New Zealand selected clone 'Redgrove' was multiplied to commercial levels by use of tissue culture. I am happy to enclose my last copy of Parva Plants 1991 Spring catalogue #54, in which the clone was released to the public. Please retain this for club archives.

Are Club members aware of the collection of yellow Clivia and breeding work carried out on the genus at Longwood Gardens in the USA?

Contact address:
Dr Robert J Armstrong/Dr James Ault,
Longwood Gardens,
P.O. BOX 501, Kennett Square,
Pennsylvania 19348-0501, USA
Longwood is a very well endowed garden which maintains and extremely high level of husbandry.

I reaffirm my desire to be an active member of the Clivia Club. Please make sure to let me know when subscriptions are again due.

Kind regards
Keith Hammett.

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Cultivar Profile

CLIVIA 'COL PITMAN'

During 1983, a batch of hybrid clivia seed was sown by Civic Trees Nursery as part of the landscape planning process for one of their development contracts. This NSW nursery specialises in large container grown stock. The clivias were to be grown to maturity for planting in an entrance atrium of a Sydney office block. Patient potting on and the eventual flowering of this batch brought forth the range of expected "large heads of bright orange flowers ".

An unexpected beauty amongst this group was a very robust yellow-flowered plant.It was held aside in the protected courtyard adjacent to the nursery office. At the time of the initial division of this plant in august 1989,four large flowering shoots and one smaller growth had been produced. Foliage is the broad dark green leaf consistent with the hybrid batch. Width of the leaves averages 50mm and an upright, arching display to 75cm is produced.

Clear yellow flowers (R.H.S. colour chart 12D) somewhat darker at the base, are produced in large hemispherical heads of approximately twenty flowers. The petals are broad and overlap, giving each flower a wide, flared mouth. Flowerheads are held clear of the foliage on stout stems. Fruit when produced, colours a butter-yellow when ripe. Very few seeds per berry are formed when the flowers are selfed, yet I have found this type to cross readily with other yellow (or non-yellow) clones. So far yellow seedlings have been produced using several yellow clones that we have here in Australia. Yellow seedlings have also been produced when crossed with Clivia "Relly Williams".

The divisions have so far shown a willingness to produce offsets, indicating a vigorous clone. This is simply a subjective observation when compared to the siblings of the same seed batch. This seedling yellow Clivia is formally named as a tribute to the late Mr. Colin Pitman, principal of Civic Trees Nursery.

It is due to Col observing and selecting this plant from a batch with no stated yellow ancestry that we have a fine cultivar to add to our collections.

Kenneth Smith
Australia

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Dear Nick,

Please find $5.00 Australian which should cover $2.00 USA.If you do have any seed later I'd appreciate it. I have been without luck trying tissue culture. Can't get multiple budding as yet, and everything is very slow.

I'll probably try Les Hannibal's notching in vitro. Can't at the moment, as I've cut the roots right off and tried higher cytokinin levels. Kevin Walters told me he had purchased some years ago, a couple of plants said to have been tissue-cultured in Holland.

If any of your friends are coming over, Sydney is a great spot for clivia. The Botanical Gardens, Hyde Park, and Tanuga Zoo Park - usually in September and October.So also in Toowoomba, Queensland, particularly with Kevin's plants. I'm trying to build up mass displays in the garden here. Should have started earlier!

Best Wishes
John Roper

*****

Dear Clivia People,

I was given nine seeds of Kew yellows by Willem Reuter of Mechelen. Of these, eight have come out with clear green parts, and one with the usual purple base. He also gave me some Kew reds. I grew all these seeds submersed in about 20mm of soil, and the containers were covered with a black plastic sheet. All the seedlings were white when they first emerged, but the yellows soon developed green parts on the leaves. The reds however became a maroonish red,no green visible, about 60D on the R.H.S. colour chart. I left them under the black plastic for about a month. The one red has now developed some green coloration, but the others are still only red after about a week out of the plastic, and in low light levels under the bench. I would like all interested members to do some seed trials this coming season. Please keep as much information as possible,i.e. temperature, humidity, moisture ,growing medium and general weather conditions. Idealy, one would want to run sightly different tests on one batch of the same type of seed which you would have split up into however many divisions.

I must mention, for the benefit of any prospectivee writer who withholds for fear of committing any grammatical or botanical error, that I am here for your benefit.

I always check , to the best of my ability, any article sent in to correct any major error. I have in the past, made deliberate errors, hoping to attract replies by these devious devices, but have since abandoned the ploy. I was ignored! Any error these days is unintentional. Ian Coates, in his comprehensive article refers to "psuedobulbs" which as we all know are devices employed by orchids. I did not correct this as I felt it was obvious and merely a descriptive usage. The Bodnant Clivia paper gives Natal as the sole source of Clivia. Again, I do not feel a need to correct this as the situation is obvious to everyone. Ron May refers to a "leaf scale". Here I am uncertain. I feel the first little leaf that comes out of the radicle is indeed a leaf, and not a bract or a leaf scale. Perhaps one of our learned members would like to enlighten us on this, and any other point. I am glad that Ken Smith's article informed me that Col. Pitman was Colin Pitman, and not as I believed Colonel Pitman! I must issue an urgent appeal to you all not to kill your club with

neglect. Do not neglect to write in to the newsletter. We are interested in how anyone grows their clivia and what happens to them. Please!

May all your Clivia thrive,
Best regards, Nick Primich.(ed.)

Index of Clivia Information in Plant Life - Herbertia 1935-1990

Compiled by Les Larsson.

1935 p136 Naturalising Eucharis & Clivia. Wyndham Hayward.
1935 p142-143 Culture of hybrid Clivias. E. P. Zimmerman. California.
1936 p115 Amaryllis propagation by terminal bud destruction. J.W. Heaton.
1936 p117-118 Notes on the Vegetative Propagation of Amaryllids. J.W. Heaton
1937 p222-223 Amaryllids at Kirstenbosch. L.B. Creasey.
1938 p156 & 205 Vegetative Propagation of Amaryllids. J.W. Heaton.
1939 p190-193 Clivia breeding. Gladys I. Blackbeard.
1940 p166-167 Chromosomes of Clivia Cyrtanthifolra. Edith Hendrix
1943 p117-123 Chromosome Numbers. W.S. Flory, Jr.
1948 p 3-21 South African Amaryllids. R.A. Dyer.
p 59-63 Clivias at Scott's Farm. Cythna Forssman.
1949 p57-60 Clivia chromosomes. J. B. Gouws. University of Pretoria.
1949 p73 Illustation of C. caulescens rootstock.
1963 p54 Cryptostephanus vansonii. Gordon McNeil.
1971 p122 Storage of Clivia seed. W. Quinn Buck.
1976 p107-108 Clivia culture .Randell K. Bennet.
1981 p151-154 My Experiences with Clivias. Shuichi Hirao.
1984 p102-105 Clivia hybrids . L.S. Hannibal.
1985 p24-29. Hybridising Clivia. P. Gordon McNeil.
1985 p30-31. Consideration of Clivia. W. J. Glover.
1988 p 29-32 Clivias. Kevin Walters
1990 E. P. Zimmerman. Clivia hybridist. William Drysdale.

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The following article is a condensation performed by me on a report on an experimental project by Ron May. I am, with the graphics at my command, unable to reproduce the excellent layout and tabulation produced by Ron.(ed.)

Synopsis

This project was undertaken to experiment with the germination rate of Clivia miniata. As a prelude to my major assignment, on hardy container stock, I chose the above species of Clivia. The depths at which a seed would germinate has always fascinated me, hence this project.

Introduction

1 Prior Knowledge

Past experience has shown that by planting clivia seed at a depth of 12.5mm in an open medium 0f one part sand, one part peat moss, one part compost, the germination was erratic and had taken about three months. The months were July to October, not exactly warm weather.The seed was under 50% shade cloth, and was watered twice weekly. Germination was 70%-80%

2 Expectations

One would expect that by having controlled bottom heat and misting, that the percentage of germination would be increased.

3 Seed Viability

A Clivia breeder from America, Mr. Wally Lane, has germinated seed in six weeks provided that they are sown fresh, He uses one part sand, one part soil, and one part peat moss in a warm, humid

atmosphere. As the seeds for this trial were extracted from the berries three weeks prior to sowing, they may have dried out a little.

Progress Report

Week One. Wednesday,16-09-92

A standard propagation mix of one part coarse sand, one part perlite, and one part peat moss was prepared for the germination of the seeds. Four 100mm black plastic pots were used with five seeds in each pot.

No.1 pot- the seeds were placed on the suface of the medium.
No.2 pot- the seeds were at a depth of 12.5mm.
No.3 pot- the seeds were at a depth of 25mm.
No.4 pot- the seeds were at a depth of 50mm.

The four pots were then placed in the propagation house on the hot bed.

Week Four. Wed. 07-10-92

Seeds on the surface of pot 1 are starting to swell. Germination imminent?

Week Five. Mon.12-10-92.

The radicle has emerged from one seed in pot 1.
Wed.14-10-92: The radicle has started to lengthen, with the root cap very prominent.

Week Six. Wed.21-10-93

Two seeds in pot one now have radicles.

Week Seven Wed.28.10.92

Pot 2 now shows activity above medium level as two plantlets emerge.

Week Eight Wed. 04-11-92

Pot 3 - one seedling emerges.

Week Nine Tues. 10-11-92

As the semester is now ending and the experiment will not go the full course in this time, the pots were all emptied and the roots measured. After inspection all the material was replanted.

Pot 1: **Seed 1**. The leaf scale is opening to reveal the apex of a leaf. No penetration into the media by the radicle at this point.
Seed 2. The apex of a leaf is now exposed to light.The radicle is just penetrating the medium.
Seed 3. Swelling has taken place. No sign of the radicle.
Seed 4. As above.
Seed 5. Ditto.

Pot 2. Seed 1. The second leaf is showing.
Seed 2. Has grown 5mm in a week.
Seed 3. Seedling is 5mm high and has two leaves.
Seed 4. The seedling emerged this week and measured 5mm.
Seed 5. As above, but 2mm high.

Pot 3. Seed 1. The seedling gained 5mm in height this week.
Seed 2. Has germinated this week.
Seed 3. Just below the surface. The leaf is at right angles suggesting it was obstructed by a small stone in the growing medium.

Seed 4. Swelling has taken place. It is firm and discoloured, but no germination.
Seed 5. As above. I disected this seed. It appears healthy and given time may have germinated.

Pot 4. Seeds 1-4 have all germinated below medium level. I am surprised that they have germinated at a depth of 50mm!
Seed 5. This was dissected and found to be in good condition and would probably have germinated as well.

Conclusion
Pot 2 took nine weeks to get 100% germination rate. I did a similar experiment without bottom heat at the hospital greenhouse. It was begun two weeks before this experiment, and will take another week to reach the stage of growth here. This suggests that planting seed at 12.5mm in open media with controlled bottom heat is the way to go.

Ron May

*****

Members

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Mrs. W.E. Allison, 10 Vestness Road, Valhalla,0185. General.
C. Barker, P.O.Box 154, Knysna, 6570. Growing & selling. Wants yellows.
Mrs. A. Cloete,14 Greenway, Pinelands, 7405.
Denise Currie,303 Cromwell Road,Lombardy East, 2090. General.
E T Davies, P O Box 92, St Francis Bay, 6312.
Mej. M. de Bruyn, Bel Monte 43, Maianalaan, Brummeria, 0184 General
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Ruith Hoskins,6 tomlinson Place, Armadale,Western Australia,6112.Gen.
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Colman Rutkin,129 Tysen Street,Staten Island,N.Y.10301.

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Dear Sir/ Madam,

I am writing to you after reading one of your newsletters. I wish to join your Clivia Club. To tell you a little of what we do here, we have, and are slowly enlarging a bulb nursery for tropical, and subtropical bulbs.

I have been growing Clivia miniata "Mammoth", and C. miniata "Twins" over a period of years, from seed imported from Holland and Germany. We have found this most rewarding and challenging. We have found that there is great varience when growing from seed. This has included the cream and the white varigation forms.

I would like you to forward us your quarterly newsletter.I have found the information most interesting. We are growers and sellers, and puddle a little in breeding.

Looking forward to hearing from you,

Yours faithfully
Coral V. Larsen

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Geagte Sekretaris,

Ek wil graag lid word van u klub en stuur hiermee my jaargeld van R10.00, volgens mnr. A. Gibello van Groot Brakrivier. Ek spog darem self met plante van Clivia miniata, C, nobilis, C. caulescens, en ook die geel C. miniata var. citrina. Ek hoor graag van u.

Beste wense
Kristo Pienaar

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Geagte heer/dame

Hiermee my aansoek en ledegeld vir lidmaatskap van die Clivia Club. Ek kweek clivias vir meer as 15 jaar o.a. van saad uit die Stellenbosch Botaniese Tuin. Meestal C. miniata,en C. nobilis (?) wat nou in volle blom is. Ook ander inheemse bolle.

Ek was nie bewus van u vereeniging nie en sal graag deelneem aan u aktiwiteite. Volgens die Veld en Flora van Junie 1992, bied u 'n geel clivia aan nuwe lede. Geld dit nog? Ek soek al lank vir ;n "Natal Yellow"

Coen Calitz.

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Angeheg vind u my tjek van R10.00 as jaargeld. Ek was baie bly toe ek in " Die Burger" van 5de Junie die adres gesien het wat Prof. Kristo Pienaar geplaas het. Ek hoop van harte dat ek nog April se nuusbrief sal ontvang.

Vriendelike groete
Mev. C. van Schalkwyk

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On the Compost Heap

Boy, am I in trouble. Some of my sisters were caught in the Editors glasshouse. Am I lying LOW!

I have heard through the grapevine(terrible stuff) that there will probably be a few yellow seeds available.Don't forget your postage.

Lily Borer