MANIPULATION OF FLOWERING PERIOD AND SHOOT MULTIPLICATION IN *CLIVIA MINIATA* (LINDLEY) REGEL

by

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To my mother

Elle a fermé sa vie comme un livre d'images
Sur les mots les plus doux qui se soient jamais dits
Elle qui croyait l'amour perdu dans les nuages
Elle l'a redécouvert au creux du dernier lit

Et riche d'un sourire au terme du voyage
Elle a quitté son corps comme on quitte un bateau
En emportant la paix gravée sur son visage
En nous laissant au cœur un infini fardeau

Elle souriait de loin du cœur de la lumière
Son âme était si claire aux franges de la nuit
On voyait du bonheur jusque dans sa misère
Tout l'amour de la terre qui s'en allait sans bruit

Comme autour d'un chagrin les voix se font plus tendres
Un ecrin de silence entourait nos regards
Les yeux n'ont plus besoin de mots pour se comprendre
Les mains se parlent mieux pour se dire au revoir

Moi qui ne savait rien de la vie éternelle
J'espérais qu'au-delà de ce monde de fous
Ceux qui nous ont aimés nous restent encore fidèles
Et que parfois leur souffle arrive jusqu'à nous

Elle souriait de loin du cœur de la lumière
Et depuis ce jour là je sais que dans sa nuit
Il existe un ailleurs où l'âme est plus légère
Et que j'aurais moins peur d'y voyager aussi

Elle a fermé sa vie comme un livre d'images
Sur les mots les plus doux qui se soient jamais dits
Elle qui croyait l'amour perdu dans les nuages
Elle l'a redécouvert au creux du dernier lit

Et riche d'un sourire au terme du voyage
Elle a quitté son corps comme on quitte un ami
En emportant la paix gravée sur son visage
En nous laissant à l'âme une peine infinie

À Ma Mère
Yves Duteil

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Abstract

Clivia miniata Regel is widely cultivated as a garden ornamental and a pot plant and can be forced to flower outside the natural flowering period by applying a cold treatment. Under local conditions this could be achieved by using a treatment of 7.5 -10 °C for 14 days. This caused a significant number of the cold treated plants to flower earlier in the season with the result that the naturally short flowering period could be extended. The 14 day period of cold treatment which was required was shorter than a period of 60 days previously described.

Little information exists regarding its use as a cut flower. It was found that inflorescences could be harvested at the stage when all flowers were still closed and that more than 90% of flowers opened and developed normal colouration either in distilled water or in a commercial postharvest product (Chrysal AKC™). The product also reduced the incidence of stem splitting.

Clivia has been propagated *in vitro* with varying degrees of success but the methods are still relatively slow. Commercial protocols for propagation exist but have not been published. Therefore, the use of *in vivo* foliar applications of paclobutrazol (PAC) and Promalin™ (PRO), to stimulate branching and shoot formation, was investigated. The main effect of PAC could be seen as the stimulation of bud formation from meristematic zones on the abaxial side of leaf bases in the older, proximal axils. The mean number of shoots produced by PAC at concentrations between 250 and 25 000 ppm varied from 2.3 to 7.1 per plant, without any statistically significant difference between treatments. However, at concentrations of 5 000 ppm and higher, growth inhibition was unacceptable. PRO had the effect of stimulating bud formation from leaf bases situated near the apical meristem, in the younger distal axils. PRO also caused dichotomous branching of apical meristems. PRO applied 10 times, at 200 or 500 ppm a.i., resulted in branching of 50% of treated plants into 2 or 3 modules. However, the latter results could not be analysed statistically. The most significant benefit arising from the use of PRO was survival of the parent plant without any inhibition of vegetative growth. Both PAC and PRO had a negetive effect on flowering at the concentrations tested. The use of PAC to stimulate *in vitro* shoot formation was attempted unsuccessfully, probably due to an inappropriate medium composition.

An understanding of plant architecture is important when trying to manipulate propagation and phenology. *Clivia* has a modular growth form and exhibits sympodial branching under natural circumstances.

Keywords : Amaryllidaceae, cut flowers, flower forcing, suckers, vegetative propagation

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Abbreviations

a. i.	: active ingredient
CHRYS	: Chrysal AKC™
cm	: centimeter
2,4-D	: 2,4-dichlorophenoxyacetic acid
dH_2O	: distilled water
g	: gram
GA_3	: gibberellic acid
GA_4	: gibberellin no. 4
GA_7	: gibberellin no. 7
l	: litre
ml	: millilitre
mm	: millimeter
mg	: milligram
M	: Mol / litre
MS	: Murashige and Skoog
PRO	: Promalin™
PAC	: paclobutrazol
ppm	: parts per million