



## 2021臺灣國際蘭花研討會蘭科植物科技研發成果發表

### Taiwan International Orchid Show Orchid Research Result Publication

技術/專利：不同肥料施用比例與時期對文心蘭檸檬綠生育與開花品質之影響

technology/patent: Effect of Nitrogen, Phosphorus, Potassium Nutrition, fertilizer concentrations and Time of Application on Growth and Flowering of *Oncidesa Gower Ramsey* 'Honey Angel'

研發機關：行政院農業委員會臺南區農業改良場

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#### 摘要 Abstract

本研究為探討不同肥料比例對文心蘭生長與開花品質之影響。以文心蘭切花品種檸檬綠，帶有一營養芽(約5-10cm高)之植株為試驗材料，施用不同氮磷鉀肥比例處理，依序為(1)對照組(N-P-K 20-20-20)、(2)A處理(芽體發育期N-P-K 20-20-20，假球莖出鞘期N-P-K 5-11-26，花梗抽出期N-P-K 20-20-20)、(3)B處理(芽體與假球莖出鞘期N-P-K 5-11-26，花梗抽出期N-P-K 20-20-20)、(4)C處理(N-P-K 5-11-26)等4種處理，每周葉面噴施處理3次，並於植株不同生長階段取樣進行植體分析與開花品質調查。結果顯示4種肥料處理與施用時期對假球莖發育影響差異不大，以B處理在開花品質如花梗長度、分支數、小花數表現最好。芽體發育期與假球莖出鞘期施用N-P-K 20-20-20除了降低開花品質表現，萌發營養芽的株數比率偏高，降低整體試驗植株之抽梗率。由植體分析結果得知，隨著文心蘭芽體發育至假球莖膨大成熟，到最後開花時，葉片碳含量維持在45~46%，氮含量由1.2~1.5%降至1.0~1.2%，磷含量在取樣期間呈現波動變化，由0.25~0.26%降至0.15~0.20%後再回升0.25~0.30%，鉀含量由2.5%降至1.5%。當代假球莖碳含量維持在45%降至41%，氮含量由1.5%降至0.6%以下，磷含量由0.25~0.26%增加至0.28~0.3%後再降至約0.2%左右，鉀含量由2.5%下降至1~1.2%，隨著假球莖生長發育呈現明顯下降的趨勢，此結果顯示碳、氮與鉀含量的改變是作為文心蘭生育與開花所需要的營養來源。

This study was to investigate the effect of fertilizers on growth and flowering of *Oncidium*. *Oncsa*. 'Honey Angel' plants with a 5-10 cm vegetative bud were used as plant materials and foliar sprayed with 4 different fertilizers: (1) control (N-P-K 20-20-20), (2) treatment A (plantlet stage N-P-K 20-20-20, unsheathing stage N-P-K 5-11-26, bolting stage N-P-K 20-20-20), (3) treatment B (plantlet and unsheathing stage N-P-K 5-11-26, bolting stage N-P-K 20-20-20), (4) treatment C (N-P-K 5-11-26) three times a week. The samples at different developmental stages were collected for further plant tissue analysis and flowering quality evaluation. The results showed no significant differences in pseudobulb growth after 4 fertilizer treatments. Flowering quality such as stalk length, branches, and florets showed better results with treatment B. The flowering quality became lower when subjected to N-P-K 20-20-20 fertilizer at unsheathing stage, however, this accompanies the increasing number of plants with vegetative bud. During plant growth form plantlet, unsheathing to bolting stage, leaf tissue carbon (C) concentration remained 45~46%, leaf tissue nitrogen (N) concentration decreased from 1.2~1.5% to 1.0~1.2%, the concentration of leaf tissue phosphorus (P) fluctuated during sampling decreased from 0.25~0.26% to 0.15~0.20% then recovered to 0.25~0.30%, leaf tissue potassium (K) concentration decreased from 2.5% to 1.5%. In pseudobulb part, and tissue C concentration decreased from 45% to 41%, while tissue N concentration decreased from 1.5% to 0.6%, leaf tissue P concentration increased from 0.25~0.26% to 0.28~0.30% and then decreased to about 0.2%, and leaf tissue potassium concentration decreased from 2.5% to 1~1.2%. The results revealed that the concentration changes of tissue carbon, nitrogen and potassium ought to be the nutrition source for supporting plant development and flowering.

#### 圖表 Figure & Table

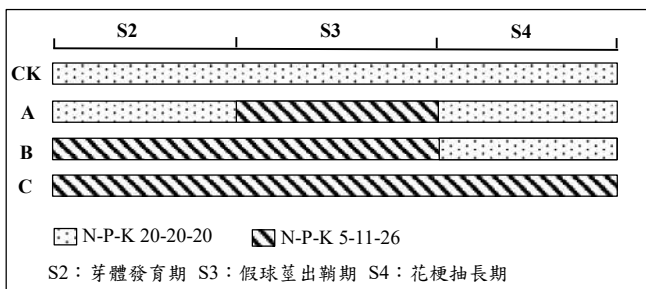


圖1.文心蘭'檸檬綠'於不同生長階段施用不同氮磷鉀比例的肥料處理時間表

表1.不同肥料處理對文心蘭'檸檬綠'植株生育之影響

肥料處理	當代假球莖大小(cm)			假球莖鮮重(g)	假球莖乾重(g)
	長度	寬度	厚度		
對照組	8.3±0.5 a <sup>x</sup>	4.0±0.4 a	2.8±0.2 a	40.9±7.1 a	2.4±0.3 ab
A處理	8.5±0.1 a	4.1±0.1 a	2.9±0.2 a	42.1±5.2 a	2.2±0.1 ab
B處理	8.2±0.3 a	4.3±0.1 a	3.0±0.1 a	47.7±2.9 a	2.4±0.2 a
C處理	8.0±0.1 a	4.0±0.1 a	2.7±0.2 a	42.9±2.9 a	2.0±0.2 b

<sup>x</sup>Mean separation within columns by LSD test at P<0.05

表2.不同肥料處理對文心蘭'檸檬綠'開花品質之影響

肥料處理	花梗長度(cm)	分枝數(no./stalk)	花朵數(no./stalk)
對照組	117.3±5.5 bc <sup>x</sup>	5.7±0.6b	70.0±8.2 ab
A處理	111.0±4.4 c	6.0±0.0 ab	63.0±5.3 b
B處理	122.3±2.5 ab	7.0±1.0 a	80.0±6.2 a
C處理	125.0±3.0 a	6.3±0.6 ab	73.0±1.0 ab

<sup>x</sup>Mean separation within columns by LSD test at P<0.05

表3.不同肥料處理對文心蘭'檸檬綠'抽梗與開花率之影響

肥料處理	抽梗株與萌芽株之株數比	抽梗株開花率(%)
CK	1:2	42
A處理	0.96:1	58
B處理	4.5:1	91
C處理	2:1	70

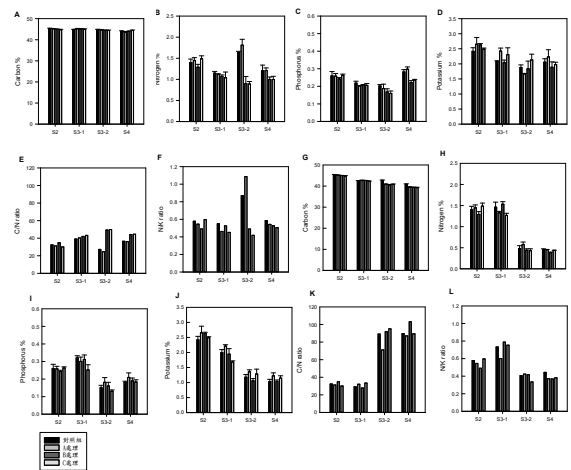


圖2.文心蘭'檸檬綠'(A-F)當代葉片之碳、氮、磷、鉀含量、碳氮比及氮鉀比;(G-L)當代假球莖之碳、氮、磷、鉀含量、碳氮比及氮鉀比。S2:芽體發育期(大芽),S3:假球莖出鞘期分為S3-1(假球莖形成中),和S3-2(假球莖成熟)兩個時期,S4:花梗抽長期(花梗大於3公分)。