2021臺灣國際蘭花研討會蘭科植物科技研發成果發表
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技術/專利：具香氣及耐黃葉病蝴蝶蘭 ‘花蓮1號-粉蘋果’之育成

technology/patent：The Breeding of Fragrant and Fusarium tolerance *Phalaenopsis* ‘Hualien No. 1-Pink Apple’

研發機關：行政院農業委員會花蓮區農業改良場

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摘要 Abstract

Phalaenopsis Hualien Pink Apple ‘Hualien No. 1-Pink Apple’形態優美且具宜人香氣，利用固相微量萃取裝置(SPME)配合氣相層析質譜儀(GC-MS)分析，蝴蝶蘭 ‘花蓮1號-粉蘋果’ 香氣的主要成分為羅勒烯(β-cis-Ocimene)、香茅醇(citronellol)、香茅醇乙酸酯(citronellol acetate)、橙花醇乙酸酯(nerol acetate)、香葉酯(geranyl acetate)等。蝴蝶蘭屬被認為是對黃葉病明顯不耐病的蘭科植物，且由*Fusarium solani*所引起的蝴蝶蘭黃葉病為臺灣蝴蝶蘭海運外銷貯運損耗的主要原因之一，故較抗黃葉病之品種為現今重要的育種方向。利用接種黃葉病菌後之發病情形評估本品種之耐病性，結果*Phal.* Hualien Pink Apple之罹病趨勢、罹病等級與罹病度，均明顯較對照品種*Phalaenopsis equestris*及*Phal.* Sogo Yukidian ‘V3’耐病。本研究顯示*Phal.* Hualien Pink Apple不僅具香味，還具有一定程度的黃葉病耐病性，深具市場潛力。

Phalaenopsis Hualien Pink Apple ‘Hualien No. 1-Pink Apple’ is not only beautiful in appearance, but also expresses fragrance. Using soild-phase microextraction device (SPME) combined with gas chromatography mass spectrometer (GC-MS) analysis, the main aroma components of *Phal.* Hualien Pink Apple are derived from β-cis-Ocimene, citronellol, citronellol acetate, nerol acetate, and geranyl acetate, etc. *Phalaenopsis* is highly susceptible to the pathogenicity of yellow leaf disease caused by *Fusarium solani*, is the primary reason for the loss of *Phalaenopsis* during storage and international shipping in air-conditioned ocean reefers. Breeding new cultivars with increased disease resistance is crucial to solving this problem. According to the disease performance, level, and severity, the control cultivars *Phal. equestris* and *Phal.* Sogo Yukidian ‘V3’ has significantly less disease tolerance than *Phal.* Hualien Pink Apple. This study shows that *Phal.* Hualien Pink Apple not only has double stalk and aroma, but also has good disease resistance from *F. solani*, has a good market potential.

結果 Results

圖1. 蝴蝶蘭‘花蓮1號-粉蘋果’之植株與花朵形態。

Figure 1. *Phalaenopsis* Hualien Pink Apple ‘Hualien No. 1-Pink Apple’.

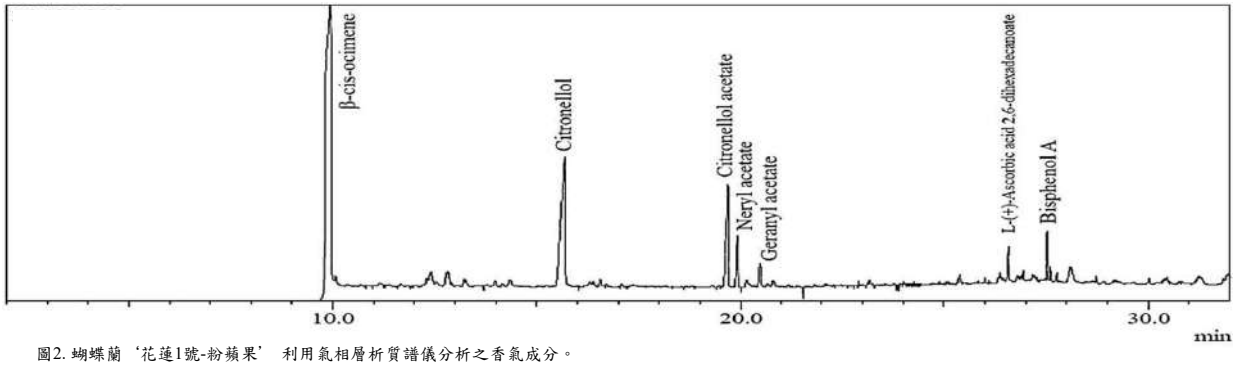

圖2. 蝴蝶蘭 ‘花蓮1號-粉蘋果’ 利用氣相層析質譜儀分析之香氣成分。

Figure 2. GC chromatograms of volatile compounds emitted from *Phalaenopsis* Hualien Pink Apple ‘Hualien No. 1-Pink Apple’.

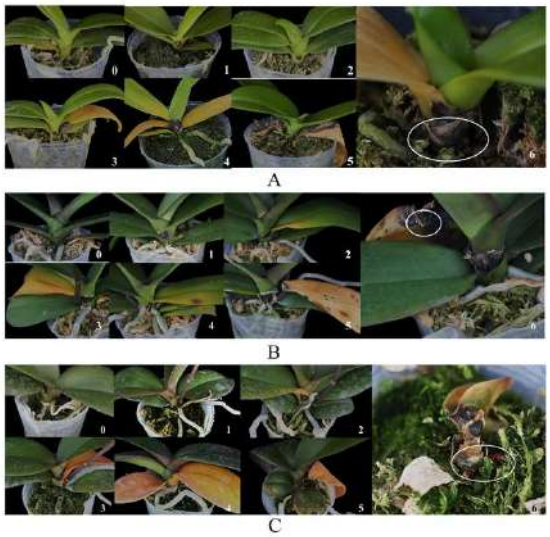

圖 3. *Phalaenopsis equestris*、*Phal.* Sogo Yukidian ‘V3’及*Phal.* Hualien Pink Apple之罹病等級(level 0-6)比較。分為7個等級，Level 0:植株健康無病徵；Level 1:表示接種部位出現黑褐色壞疽癒合斑；Level 2: 植株單一葉片出現黃化(黃化面積<1/2)；Level 3: 植株單一葉片黃化(黃化面積>1/2)；Level 4: 植株多數葉片黃化(黃化面積>1/2)；Level 5:罹病葉片落葉；Level 6:肉眼可見紅色病害孢子。

Fig. 3. Comparation of different disease level (0-6) between *Phalaenopsis equestris* (A), *Phal.* Sogo Yukidian ‘V3’(B), and *Phal.* Hualien Pink Apple (C).

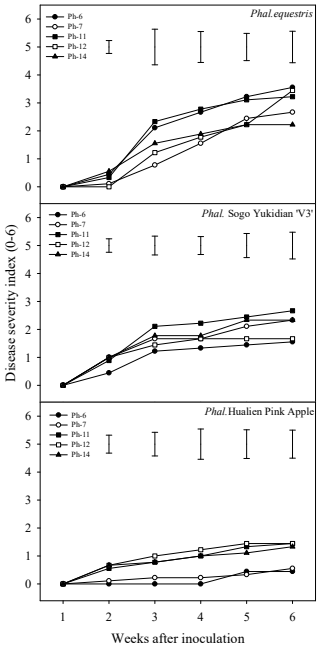

圖4.不同蝴蝶蘭黃葉病菌株(Ph 6、7、11、12及14)接種對於*Phal. equestris*、*Phal.* Sogo Yukidian ‘V3’和*Phal.* Hualien Pink Apple罹病趨勢之影響。

Fig. 4. Effect of different isolates of *Fusarium* spp. (Ph 6, 7, 11, 12, and 14) on disease performance in *Phal. equestris*, *Phal.* Sogo Yukidian ‘V3’, and *Phal.* Hualien Pink Apple.

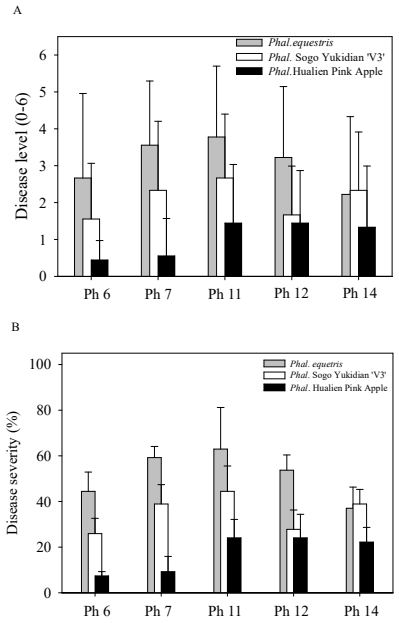

圖 5.*Phalaenopsis equestris*、*Phal.* Sogo Yukidian ‘V3’及*Phal.* Hualien Pink Apple之黃葉病菌株(*Fusarium* spp.) Ph6、7、11、12和14罹病程度比較。

Fig. 5. Comparation of different isolates of *Fusarium* spp. (Ph6, 7, 11, 12, and 14) on disease level (A) and disease severity (B) between *Phalaenopsis equestris*, *Phal.* Sogo Yukidian ‘V3’, and *Phal.* Hualien Pink Apple.

結論 Conclusion

蝴蝶蘭‘花蓮1號-粉蘋果’具雙梗性及宜人香氣，同時盆徑7.6 cm時即具開花性，可不經人工催花於春節前自然來花。依據本研究結果，*Phalaenopsis* Hualien Pink Apple ‘Hualien No. 1-Pink Apple’還具有一定程度的黃葉病耐病性，顯示本品種深具產業推廣潛力。

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