

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：蝴蝶蘭異屬雜交後代的鐮胞菌(*Fusarium* spp.)耐病性初探

technology/patent: Evaluation of disease tolerance to *Fusarium* spp. in heterogeneous hybrid progeny of *Phalaenopsis*

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摘要 Abstract

蝴蝶蘭屬被認為是對黃葉病明顯不耐病的蘭科植物，因此由黃葉病菌(*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。本研究以分離之黃葉病菌株，接種於蝴蝶蘭異屬雜交後代族群的傷口進行耐病性評估，期能藉由異屬雜交，選育出耐抗黃葉病的新品種。試驗結果顯示異屬品種對黃葉病的耐抗性都顯著較蝴蝶蘭佳；蝴蝶蘭原種*Phalaenopsis pulcherrima*及*Phal. equestris*接種後的罹病率平均分別為49.2%及51.2%；而異屬雜交後代*Vandaenopsis* Thanaphatr Jongdamkerng (*Vanda vietnamica* × *Phal. equestris*)、*Vdnps. Pulcherrimin* (*Phal. pulcherrima* × *Vanda miniata*)、*Renanthopsis Yuyake* (*Renanthera monachica* × *Phal. equestris*) 與 *Rhynchonopsis Rocky Stewart* (*Phal. pulcherrima* × *Rhynchosytilis coelestis*) 的罹病率平均分別為29.0%、12.0%、27.0%及35.2%，上述異屬雜交後代對黃葉病的耐抗性亦較蝴蝶蘭佳。

Phalaenopsis is considered to be an orchid plant that is highly susceptible to yellow leaf disease (*Fusarium solani*). Yellow leaf disease is one of the main reasons for the loss during storage and transportation of *Phalaenopsis* exported from Taiwan. In this study, the isolated disease strains were been inoculated into the wounds of the heterogeneous hybrid progeny of *Phalaenopsis* to evaluate the disease resistance. It is expected that new varieties resistant to yellow leaf disease can be select through heterogeneous hybridization. The disease severity of *Phalaenopsis pulcherrima* and *Phal. equestris* were 49.23% and 51.24%, respectively, and plants of other genus were significantly more resistant to yellow leaf disease than *Phalaenopsis*. The disease resistance performance in the offspring of heterogeneous hybrids is generally better than that of *Phalaenopsis*; the average disease severity of *Vandaenopsis* Thanaphatr Jongdamkerng (*Vanda vietnamica* × *Phal. equestris*), *Vdnps. Pulcherrimin* (*Phal. pulcherrima* × *V. miniata*), *Renanthopsis Yuyake* (*Renanthera monachica* × *Phal. equestris*), and *Rhynchonopsis Rocky Stewart* (*Phal. pulcherrima* × *Rhynchosytilis coelestis*) was 29.0%, 12.0%, 27.0%, and 35.2%, respectively.

結果 Results

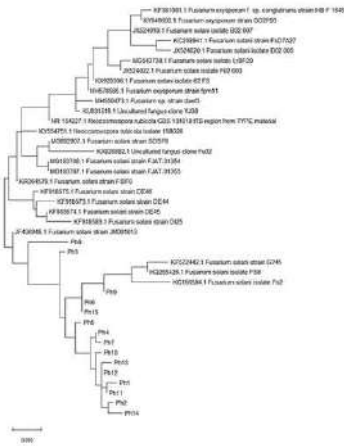


Fig. 1. Phylogenetic tree of different isolates of *Fusarium* spp. (Ph. 1-15).



Fig. 2. Comparison of different disease level (0-6) between *Phalaenopsis equestris*.

Divided into 7 levels, Level 0: Plants stay healthy; Level 1: Indicates dark brown gangrene healing spots at the inoculation site; Level 2: Single leaf is yellowing (yellowing area < 1/2); Level 3: Single leaf is yellowing (yellowing area > 1/2); Level 4: Most leaves is yellowing (yellowing area > 1/2); Level 5: A sick leaf is fall; level 6: Red spores are visible

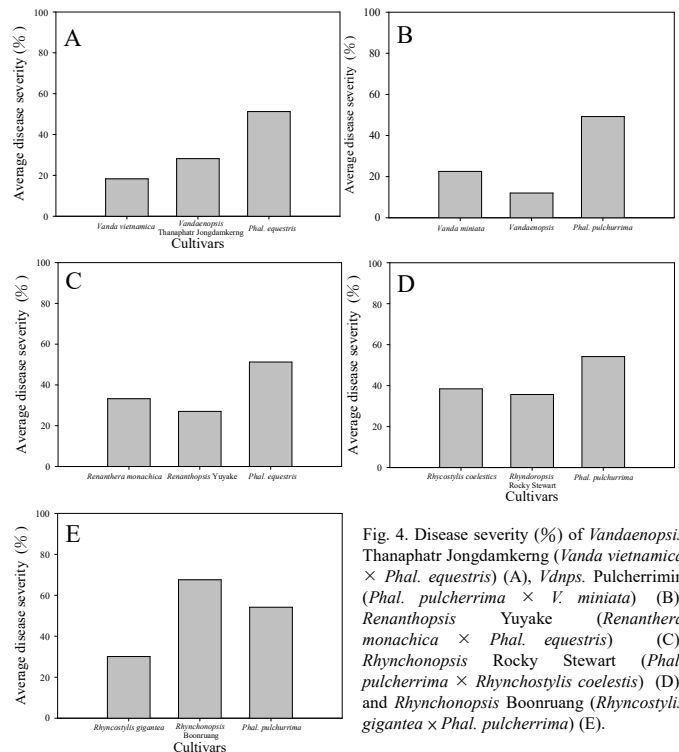


Fig. 4. Disease severity (%) of *Vandaenopsis* Thanaphatr Jongdamkerng (*Vanda vietnamica* × *Phal. equestris*) (A), *Vdnps. Pulcherrimin* (*Phal. pulcherrima* × *V. miniata*) (B), *Renanthopsis Yuyake* (*Renanthera monachica* × *Phal. equestris*) (C), *Rhynchonopsis Rocky Stewart* (*Phal. pulcherrima* × *Rhynchosytilis coelestis*) (D), and *Rhynchonopsis Boonruang* (*Rhynchosytilis gigantea* × *Phal. pulcherrima*) (E).

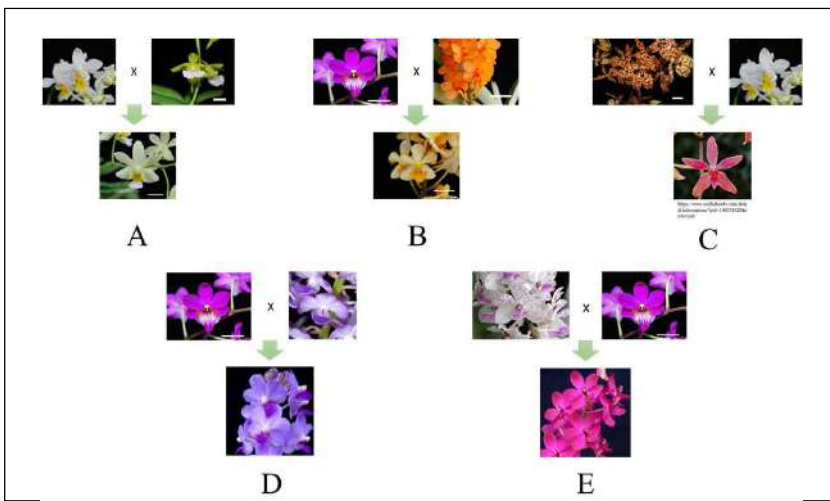


Fig. 3. Plants of *Vandaenopsis* Thanaphatr Jongdamkerng (*Vanda vietnamica* × *Phal. equestris*) (A), *Vdnps. Pulcherrimin* (*Phal. pulcherrima* × *V. miniata*) (B), *Renanthopsis Yuyake* (*Renanthera monachica* × *Phal. equestris*) (C), *Rhynchonopsis Rocky Stewart* (*Phal. pulcherrima* × *Rhynchosytilis coelestis*) (D), and *Rhynchonopsis Boonruang* (*Rhynchosytilis gigantea* × *Phal. pulcherrima*) (E).

結論 Conclusion

利用較抗黃葉病的異屬親本與蝴蝶蘭屬雜交，結果顯示雜交後代普遍明顯比供試蝴蝶蘭品種具黃葉病耐抗性，有機會應用作為抗病育種種原。未來期待選育出良好的外觀及生長勢，又兼具耐病性之優良商業品種。

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