ORCHID BREEDING (*Phalaenopsis)* FOR SOUTHERN VIETNAM

Do Khac Thinh, Duong Lan Oanh, Nguyen Thi Thanh Huyen and Ngo Thi Bich

Orchids- the most glamorous and spectacular flowering plants, now are becoming the cash crops in Vietnam. However, in the market, almost commercial orchid varieties have been originated from abroad and poorly adapted to Southern Vietnam climate. It is need to breed new orchid (*Phalaenopsis*) varieties suitable to market and adapted to conditions of South Eatern region, Vietnam.

Hybridization has been conducted with 20 commercial varieties and 2 wild types of orchid species (*Phalaenopsis pulcherrima*). Evaluation on major characters of leaves, plants and flowers were carried out among parents and their progenies.

MAJOR CHARACTERS OF PHALAENOPSIS PROMISING LINES

Characters of parent and their hybrid lines of combination HD 01

HD01 combination was crossed by female MS08 (Phal. Minho Princess) x male MS09 (Phal. Salu Spot). The crossing was aimed to obtain flowers of hybrids having different colors, thick petals and sepals from male, large petals from female. These traits have strong correlation with tolerant property to high temperature.

Consequently, there were six F_1 promising lines. These lines named as L1.1, L1.2, L1.3, L1.4, L1.5 & L1.6 with segregating ratios of 22%, 24%, 15%, 18%, 5% and 13%, respectively. Then 3% remained plants having intermediate traits of selected lines.

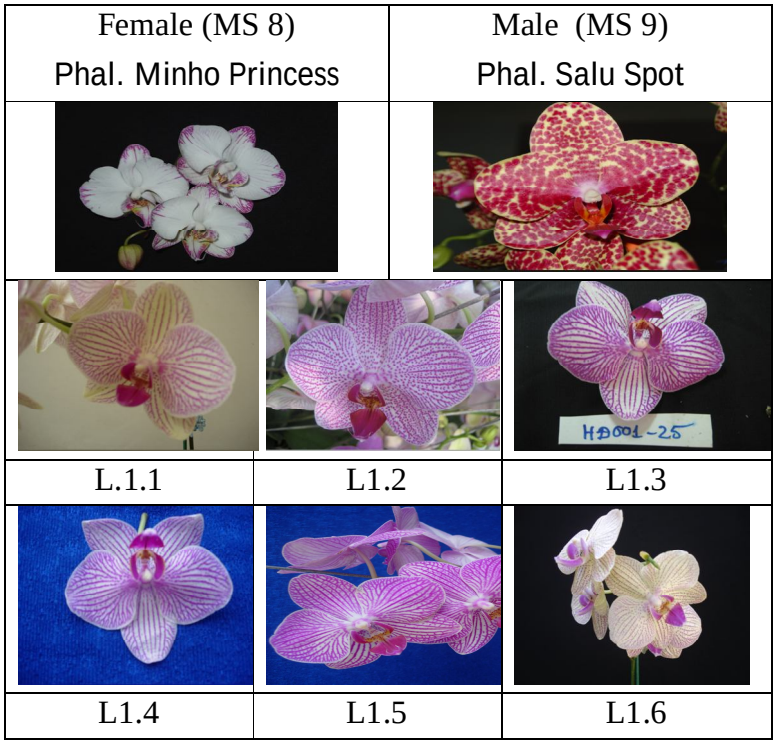
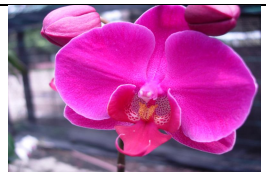


Figure 1. Flower pictures of parents & their hybrids in HD 01 combination

Traits of hybrid progenies and their parents

Almost lines had striped flowers with wider & longer petals than their parents. Therefore, this combination is promising to develop as commercial *Phalaenopsis* varieties. Lines named L1.1, L1.2 & L1.4 consisted of large petals and sepals, lines of L1.1 & L1.4 were largest diameter of flowers. These lines were concentrated open flowering time in 3-5 days as same as parent. F_1 hybrid individuals had flowering longevity of 60-70, especially line L1.6 was 90-120 days of flowering duration. Under high temperature, hybrid progenies exhibited their more heat tolerant than parents.

Characters of parents and their hybrids in combination HD 06

Female (MS 18) Dtps. [Coral grm – (octohime Lipperose)]	Male (MS 17) Dtps.Carmel's sport B#1
	

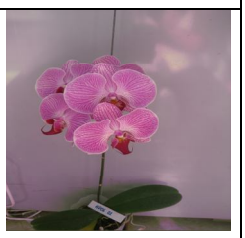
L6.1	L6.2	L6.3
		
		
L6.4	**L6.5**	

Figure 2. Flower pictures of hybrids progenies and their parents in combination HD 06

The combination of HD06 has female as MS.18 (Dtps. Grm-(octohime Lipperose)) and male as MS.17 (Dtps. Carmela's sports B#1). Breeding objective is to obtain hybrid plants with larger size of red petals, sepals and flower lips combined different color veins, leaves in various sizes and glossiness. Segregating individuals have petals, sepals in purple, red-purple, flower veins with various clearing colors, dots in flowers with different sizes. Population structure of segregating ratio of lines as L6.1, L6.2, L6.3, L6.4 & L6.5 are 31.3%, 11.0%, 7.5% , 22.0% and 27.0%, respectively. Generally, this combination produced beautiful flower individuals, long flowering stalks (50-60cm) and high

consumer acceptance. Data indicated that petal size was positively correlated with diameter of flowers. Almost hybrid lines had diameter of flowers as same as or larger than their parents. The largest diameter of flowers was line L6.1 with 12 cm. These lines were concentrated open flowering time in 5-7 days as same as parent. By evaluation of main characters, promising lines of L6.1, L6.2 & L6.3 had been selected.

Improvement of disease tolerance

Two main diseases damaged to *Phalaenopsis* orchid as Anthracnose spots (*Colletotrichum sp.*) and Bacterium soft rot (*Erwinia carotovora*). Research results indicated that lines in morphological traits with hard, medium or narrow, sloping angle leaves were tolerant to these diseases. HD03 and HD04 combinations were high tolerant to two diseases. Especially hybrid plants crossed between wild species (*P. pulcherrima*) and commercial varieties were very high resistant to Anthracnose spots and Bacterium soft rot diseases as in case of HD 60 infested 0-1.2% only in comparing to 17.4-26.5% of commercial varieties.

Anthracnose spots (*Colletotrichum sp.*)	Bacterium soft rot *(Erwinia carotovora)*

Figure 3. Two main diseases damaged *Phalaenopsis* orchids

RECOMMENDATIONS

Eighteen combinations had to be established for nine plant populations of which seven combinations were produced flowering plants and two undeveloped flower ones which crossed between wild species (*P. pulcherrima)* and commercial varieties. It could not be pollination if wild species (*P. pulcherrima*) is male role, but normal development if it used as female plants.

Promising hybrid lines as L1.1, L1.3 (HD01); L4.1 (HD04); L6.1, L6.2 & L6.3 (HD06) have novel in color, size, structure flowers in comparing their parents.

Two main diseases damaged to *Phalaenopsis* orchid as Anthracnose spots (*Colletotrichum* sp.) and Bacterium soft rot (*Erwinia carotovora*). Wild orchid species (*Phal. pulcherrima*) is considered as donors to breed new varieties resistant to these diseases.