Alstroemeria 'Las Olas'^{PPAF}, A Semi-dwarf, Tetraploid Hybrid Selection for Hot Climates

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Alstroemeria 'Las Olas'^{PPAF} is a semi-dwarf, cutflower-quality, hybrid selection with a flowering season lasting from April to July under south Florida conditions. Unlike most of the commercial *Alstroemeria* cultivars (Bridgen, 1997), 'Las Olas' exhibits remarkable heat tolerance, and has survived south Florida's subtropical, monsoon-like summers for 3 years in the field under shade cloth, despite occasional torrential rains. 'Las Olas' can be grown for the local market by growers in hot climates with minimal infrastructure. The semi-dwarf stature of the plant also allows for production as a container plant and use as a garden herbaceous perennial in USDA Zones 8-11.

Origin

'Las Olas' is a selection from open-pollinated seed produced by F.M.'s grex, distributed widely in California and known informally as "Meyer's Hybrid" strain. The original hybrids between *A. pelegria* L. (Chilean origin) and *A. pulchella* L. f. (Brazilian origin) were made by F.M. in the early 1980s via embryo rescue and subsequent tetraploidization (to restore fertility) with colchicine. These hybrids produce copious open-pollinated seed in California. Seed was sent to A.W.M. in 1991 and 'Las Olas' was selected from several hundred plants subsequently grown and field-tested in south Florida. The cultivar name 'Las Olas' ("the waves" in Spanish) is taken from the well-known avenue in Fort Lauderdale, Fla. Color descriptions below are based on the *RHS Colour Chart* (Royal Horticultural Society, 1966).

Description

Alstroemeria 'Las Olas' (Fig. 1) is a vigorous, rhizomatous perennial with root tubers. Both vegetative and reproductive stems are erect, densely foliated, and 39 to 57 (reproductive stems to 65) cm tall. Leaves are resupinate,

grayish-green, oblanceolate, 5 to 10 cm long, and 1.5 to 2 cm wide. Inflorescences are terminal, bracteate umbels of cymes with three to five rays. Flowers one to four per ray, zygomorphic, broadly funnelform-campanulate, 6 to 7 cm long, 5.8 to 6.3 cm wide laterally and 4.5 to 5.8 cm wide dorsal-ventrally. The outer tepals are red-purple (73B-74D) with a small amount of green (141B) at the apex, 50 to 56 mm long and 20 to 22 mm wide. The inner tepals are red-purple (74D) on the abaxial surface with a central white zone, white with elongated red-purple (59A) spots on the adaxial surface, and 55 to 59 mm long and 12 to 15 mm wide. The stamens and style are red-purple (74D). Individual stems will bear 3 to 17 flowers. Vegetative stems lengthen late in the growing season.

Performance

A 9-m² test plot of *Alstroemeria* 'Las Olas' was evaluated at Fort Lauderdale, Fla., from 1995 to 1996 (Table 1). Also, a field trial was performed in 1993, but no data were recorded. Divisions with two to six vegetative stems were planted on 0.45-m centers in Oct. 1994 in Miramar fine sand amended with 0.3 m³·m⁻² sedge : sphagnum peat (1:1) that was incorporated into the upper 15 cm of topsoil. The plot was situated under 50% saran shade cloth [maximum photosynthetic photon flux (PPF) = 1100 $\mu\text{mol}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$]. The plot was fertilized with granular 12N-4P-12K-4Mg with micro-nutrients (Atlantic FEC, Homestead, Fla.) every 3 months at a rate of 0.25 kg·m⁻². Manganese deficiency (associated with south Florida soils) appeared in the 1993 planting and resulted in flower bud abortion. Consequently, supplemental MnSO₄ at a rate of 30 g·m⁻² was applied in Feb. 1995 and 1996 to alleviate this problem. Flowering commenced in April and continued until June, with a peak in May. Mean values (14 plants) for number of flowering stems per plant for April, May, and June 1996 were 0.7 (± 1.5), 12.3 (± 8.6), and 7.6 (± 4.0), respectively. The number of flowering stems was directly correlated with the size of the plant (i.e., the number of vegetative stems, data not presented). Consequently, the size of the liner stock used to develop a bed of 'Las Olas' should be uniform. Divisions with a minimum of six vegetative stems will result in good yields during the first flowering season. Based on the percentage of cover in the test plot in 1996 (Table 1), a minimum seasonal

Fig. 1. *Alstroemeria* 'Las Olas'.

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yield of 43 stems per m² could be expected at planting densities approaching a 100% cover. Yield probably can be increased further by planting divisions 0.2 to 0.3 m on center and increasing the fertility rate (Bridgen, 1993), which was moderate during the evaluation period. Yields in both years were reduced to an undetermined degree by infestations of an as yet unidentified tortricid moth larva that fed on the apices of both vegetative and reproductive stems. Chemical controls beginning early in spring will eliminate this pest. Sweet potato whitefly [*Bemisia tabaci* (Gennadius)] appeared on the plants at low density in 1993 but have not been a problem since the introduction of *Encarsia formosa* Gahan on the Fort Lauderdale Research & Education Center. No other insect or disease problems have been encountered. Although 'Las Olas' has been grown successfully in the open in south Florida, overhead protection from heavy rainfall will be beneficial in commercial plantings. Shade levels in the production environment also could be reduced an additional 10%.

'Las Olas' was evaluated in containers in 1993 and 1996 (Table 1). Divisions with two to four vegetative stems were established in 0.5-L containers of 5 aged pine bark : 4 sedge peat : 1 sand amended with 5.0 kg·m⁻³ 17N-2.3P-10K Osmocote (Grace-Sierra, Milpitas, Calif.), 4.2 kg·m⁻³ dolomite, and 1.2 kg·m⁻³ Micromax (Grace-Sierra) in Aug. 1992 and 1995. Plants were transferred to 2.7-L containers of the same medium in October of both years. Plants were grown on benches under 63% saran shade (maximum PPF = 800 μmol·m⁻²·s⁻¹) and irrigated as needed. Flowering began in April in both years, peaked in May, and continued through July in 1993 and June in 1996. Reducing shade levels to 30% to 40% should increase flowering.

Postharvest quality of 'Las Olas' is comparable to commercially available alstroemeria cultivars. Stems harvested at the "rolled petal

Table 1. Performance of *Alstroemeria* 'Las Olas' at Fort Lauderdale, Fla.

Year	No. plants	Cover of 9-m ² test plot at flowering (%)	Total flowering stems harvested	Avg no. flowering stems per plant (±SD)	Avg no. florets per inflorescence (±SD)
<i>Field, 1995-96</i>					
1995	14	50	150	11.5 (9.6)	6.3 (2.4)
1996	14	75	288	20.6 (12.5)	7.4 (1.4)
<i>Container, 1993, 1996</i>					
1993	14	---	147	10.5 (5.2)	6.8 (2.7)
1996	12	---	95	7.9 (3.5)	7.2 (1.6)

stage" (Bridgen, 1993) retained good color and appearance for 2 weeks in deionized water without floral preservative in five series of replicated trials (n = 15) at room temperature (23 to 25 °C.). Foliar chlorosis did not appear until the second week after harvest.

Culture

'Las Olas' can be grown easily in USDA Hardiness Zones 9-11 under a simple, open roofed structure providing no more than 50% light exclusion. In Zone 9, light winter protection (such as polyethylene wrap around the shadehouse) may be advisable. Although hardiness trials have not been conducted, 'Las Olas' will probably not reliably overwinter outdoors above Zone 8, consistent with reports for other clones of the "Meyer's Hybrid" grex. Stock plants can be divided into offsets with six vegetative stems and established in 0.5-L containers before being set into outdoor beds. If grown in raised or ground beds inside a greenhouse, divisions can be planted directly in the beds. Raised beds of a well-drained medium (at least 50% organic material by volume) can be constructed. Sandy or heavy clay soils in outdoor beds should be amended with 0.3 to 0.5 m³·m⁻² peat or peat substitute incorporated into the upper 15 cm of topsoil. A pH of 6.3 to 6.8 is advisable, although a higher

pH is tolerated. Manganese deficiency may occur on higher pH soils unless supplemental Mn is supplied. Divisions should be set 0.2 to 0.3 m on center in beds to allow for at least 2 years growth without further division. The fertilization program should be based on providing N at 0.25 kg·m⁻² annually. Fertilization should be reduced by half in late summer as the growth of 'Las Olas' slows. New vegetative shoots develop during fall and winter under south Florida conditions.

Availability

The Florida Agricultural Experiment Station has applied for a U.S. Plant Patent on *Alstroemeria* 'Las Olas'. Licensing to interested growers will be handled by the Florida Foundation Seed Producers, Inc., Box 309, Greenwood, FL 32433.

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