

'Asian Flame' an Asiatic Hybrid Lily with Unspotted Red Petals

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Abstract. An Asiatic lily cultivar 'Asian Flame' was bred in 2007 at National Institute of Horticultural and Herbal Science (NIHHS), Rural Development Administration (RDA) of Korea. The crossing was conducted between female parent A94-34 ('Montreux' × 'Anabelle') and male parent 'Fire' by stigmatic pollination at Suwon in 1996. First selection was done and tentatively named as A98-98 in 1998. After in vitro multiplication and bulb production of A98-98 line, growth and flowering characteristic tests has been conducted from 2005 to 2007. The evaluation of characteristics and preference were surveyed at a lily flower show of NIHHS in 2007 in Taean. The new cultivar 'Asian Flame' flowers in middle of June and grows to an average of 122.7 cm in height. Flowers bloom upward-facing, red (RHS 45B) petals. Year-round flowering is possible by storage of the bulb under -1.5°C conditions. For forcing culture, it is necessary to add calcium to the fertilizer or remove side scales of large bulb to prevent leaf scorch.

Additional key words: bulb, breeding, flower, *Lilium* spp., new variety

Introduction

The lily belongs to the genus *Lilium* of the family Liliaceae. Lily is a perennial bulb and monocotyledonous plant. There are seven sections of the genus *Lilium* based on botanical classifications (Comber, 1949). Most of lily sections cultivated worldwide as well as Korea are divided into Asiatic hybrids, Oriental hybrids and *Longiflorum* hybrids. Asiatic hybrids include flower colors such as orange, red, yellow, tan, and white; the flowers are usually orientated upward with a little or no fragrance. Asiatic lily cultivars cultivated in Korea include 'Brunello', 'Valdisole', 'Nova Cento', 'Compass', 'Dreamland', 'Cannes', 'Solemio', 'Elite', 'Navonna' and 'Mona' (Rhee, 2008). Fifty-eight Asiatic hybrid lily varieties have been bred in Korea from 1998 to 2008. There are 'Yena' (Rhee et al., 2005) with pink, 'Maro' (Rhee et al., 2006) with orange, 'Sabi' (Rhee, 2007) with yellow etc., for bedding and 'Bomi' (Rhee et al., 2006) with yellow, 'Joara' (Rhee et al., 2008) with orange, 'Apricot King' (Rhee et al., 2009) with light orange etc., for cut flower. Red is an important color of high quality in cut flower as rose. Red color of lily cultivars is unusual worldwide as well as Korea. The goal of this research was to breed the red color, large flower size and spotless in Asiatic hybrid lily. 'Asian Flame' is a new Asiatic hybrid lily with bright red colored petals.

Origin

The crossing was conducted between female parent A94-34 ('Montreux' × 'Anabelle') and male parent 'Fire' by stigmatic pollination at Suwon in 1996. Controlled pollination, seed sowing, and seedling was done in the greenhouse. First selection was done and tentatively named as 'A98-98' in 1998. After in vitro multiplication and bulb production of A98-98 line, growth and flowering characteristic tests were conducted from 2005 to 2007. The evaluation of characteristics and preference were surveyed at a lily flower show of National Institute of Horticultural and Herbal Science (NIHHS) in 2007 in Taean. A98-98 lily line was finally named as 'Asian Flame' in 2007 at NIHHS, RDA, Suwon (Fig. 1). 'Asian Flame' was developed as a year-round flower and bred to satisfy consumers and farmer's needs. The evaluation of characteristics was made according to the Manual for Agricultural Investigation (RDA, 1995) and the Guidelines for the conduct of tests for distinctness, homogeneity, and stability of lily (*Lilium* spp.) (UPOV, 1991). Vase life was examined indoors at a minimum 20°C temperature and cut flowers of 60 cm stem length were used. Preference was surveyed at a lily exhibition at NIHHS for consumers in 2007.

Description

As shown in Tables 1, 2, and 3, 'Asian Flame' flowers in the middle of June. Plant height averaged 122.7 cm when grown in an unheated plastic house at the NIHHS in Suwon. Flowers are upward-facing, and have unspotted red (RHS,

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Fig. 1. A flower and plant of 'Asian Flame' lily.



Fig. 2. Pedigree diagram of Asiatic lily 'Asian Flame'.

Table 1. Morphological characteristics of an Asiatic lily, 'Asian Flame'.

Cultivar	Flower color (RHS) ^z	Stigma color	Pollen color	Spot	Blooming direction	Usage
Asian Flame	Red (45B)	Dark red	Scarlet	None	Upright-facing	Cut flower
Monte Nigro (Control)	Red (53B)	Purple	Reddish brown	Yes	Upright-facing	Cut flower

^zRHS denotes Royal Horticultural Society Color chart.

Table 2. Flowering and growth characteristics of an Asiatic lily 'Asian Flame'.

Cultivar	Flowering time ^z	Plant height (cm)	Flower diameter (cm)	Outer petal length (cm)	Outer petal width (cm)	Leaf length (cm)	Leaf width (cm)
Asian Flame	June 13th	122.7 ± 6.2 ^y	15.6 ± 0.8	8.5 ± 0.4	2.5 ± 0.1	12.5 ± 3.4	1.3 ± 0.1
Monte Nigro	June 10th	102 ± 0.5	12.5 ± 0.1	7.7 ± 0.6	2.5 ± 0.1	11.6 ± 0.6	1.6 ± 0.2

^zPlanted on Nov. 20th, 2006

^yMean ± standard error.

Table 3. Bulb characteristics of Asiatic lily 'Asian Flame'.

Cultivar	No. of noses	Bulb circumference (cm)	Bulb weight (g)	No. of bulblet	Bulblet weight (g)
Asian Flame	1.2 ± 0.4 ^y	13.2 ± 2.8	31.2 ± 6.9	1.2 ± 1.5	1.3 ± 2.0
Monte Nigro	1.8 ± 0.7	18.6 ± 2.5	45.0 ± 10.3	-	-

^zHarvested on Sep. 20th, 2007

^yMean ± standard error.

Table 4. Vase life and consumer's preference of Asiatic lily 'Asian Flame'.

Cultivar	Vase life of cut flower (days) ^z	Consumer's preference ^y
Asian Flame	13.5 ± 1.8 ^x	4.0
Monte Nigro	11.5 ± 2.4	3.2

^zVase life was measured under indoor conditions of minimum temperature at 20°C at night. The stem length of cut flowers was adjusted to 60 cm.

^yPreference was surveyed at a lily flower show of NIHHS in 2007 (1, Poor; 3, intermediate; 5, excellent)

^xMean ± standard error.

45B) petals (Fig. 1). The throat of flower is red. The stigma is dark red and pollen is scarlet (Table 1). The flower diameter is 15.6 cm. Mean of outer petal length and width is 8.5 cm and 2.5 cm, respectively. Leaves are 12.5 cm long and 1.0 cm wide (Table 2). The weight and circumference of bulb is 31.2 g and 13.2 cm, respectively. The number of nose is 1.2 (Table 3). Vase life of cut flower is 13 days and the preference over the control cultivar was well evaluated (Table 4).

Precautions of cultivation and prospects

'Asian Flame' can be propagated by standard methods of division and artificial scaling. Bulbs were also multiplied by tissue culture methods using lily multiplication medium. Year-round flowering can be achieved by storing the bulb under -1.5°C conditions. For forcing culture, it is necessary to add calcium to the fertilizer or remove side scales to prevent leaf scorch. *Botrytis* disease control is needed in the monsoon season. 'Asian Flame' has a bright red color.

Availability

'Asian Flame' was applied as No. 2008-15 on February 15, 2008 and registered as No. 2633 on April 27, 2009. Consequently, it is being protected by Korean Seed Industry Law. NIHHS, RDA releases 'Asian flame' bulbs but does not

have stocks of this cultivar available for distribution. The bulbs increased by cooperating wholesale propagating nurseries will be the source of plants for introduction in 2010.

Literature Cited

- Comber, H.F. 1949. A new classification of the genus *Lilium*. Royal Hort. Soc. Lily Year Book. 13:86-105.
- International Union for the Protection of New Varieties of Plants (UPOV). 1991. Guidelines for the conduct of tests for distinctness, homogeneity and stability of Lily (*Lilium* spp.).
- Rhee, H.K. 2008. Lily Industry and Breeding Research in Korea. International symposium on the utilization of *Lilium* products and production of *Lilium* in Japan, Korea, and China. Taean. pp. 79-98.
- Rhee, H.K., H.R. Cho, J.H. Lim, H.K. Shin, M.S. Kim, Y.J. Kim, J.M. Kim, H.J. Kim, and Y.J. Na. 2005. A new Asiatic lily 'Yena' with bright pink for bedding flower. Kor. J. Hort. Sci. Tech. 23:471-474.
- Rhee, H.K., H.R. Cho, J.H. Lim, and Y.J. Kim. 2006. A new Asiatic lily, 'Maro', with spotted deep orange petals. Korean J. Breed. 38:145-146.
- Rhee, H.K., H.R. Cho, J.H. Lim, D.H. Goo, and Y.J. Kim. 2006. A new Asiatic lily, 'Bomi', with unspotted bright yellow petals. Korean J. Breed. 38:51-52.
- Rhee, H.K., H.R. Cho, and J.H. Lim. 2007. 'Ahyun', an Asiatic lily with light orange petals. Korean J. Breed. 39:84-85.
- Rhee, H.K., 2007. A new Asiatic lily 'Sabi' with deep yellow flower for bedding. Kor. J. Hort. Sci. Tech. 25:291-294.
- Rhee, H.K., H.R. Cho, J.H. Lim, M.S. Kim, and S.Y. Choi. 2008. An Asiatic hybrid Lily, 'Joara', with unspotted orange petals. Korean J. Hort. Sci. & Tech. 26 (Suppl. II):100-103.
- Rhee, H.K., H.R. Cho, J.H. Lim, M.S. Kim, S.K. Park, and H.Y. Joung. 2009. An Asiatic hybrid Lily, 'Apricot King', with unspotted light orange petals. Flower Res. J. 17:36-39.
- Royal Horticultural Society (RHS). 1986. The royal horticultural society color chart. Royal Hort. Soc., London.
- Rural Development Administration (RDA). 1995. Manual for agricultural investigation. Suwon.

무반점 적색 아시아틱 나리 '아시안플레임' 육성

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초 록. '아시안플레임'은 국립원예특작과학원에서 2007년에 육성된 절화용 아시아틱 나리 품종이다. 1996년에 적색 아시아틱 나리 계통 'A94-34'와 적색 아시아틱 나리 'Fire'를 교배하여 종자를 획득하였고, 종자를 파종 및 육묘하여 1998년에 'A98-98' 계통을 선발하였다. 이 계통은 1999년부터 조직배양에 의한 대량증식, 순화 및 양구를 거쳐 2007년까지 생육 및 특성검정을 수행하였다. '아시안플레임'의 개화기는 6월 중순이다. 꽃은 상향으로 개화하고, 화색은 적색이다. 초장은 122.7cm이다. 주년재배를 위해서는 -1.5°C에 구근을 동결저장하여 정식시기를 달리하여 활용할 수 있다. 축성재배에서 엽소증상을 방지하기 위해서는 대구의 외인편을 제거하거나 칼슘제를 시비해 주어야 한다.

추가 주요어 : 구근, 육종, 화훼, 백합, 신품종