

## Propagation and Seed Germination of *Erythronium japonicum*

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*Erythronium japonicum* is a perennial bulb plant in the Liliaceae, the only member of the genus endemic to Japan. In early spring, *E. japonicum* produces a pale purple flower in which the sepals and petals recurve as in cyclamen flowers. In the wild, flowering occurs 7 to 8 years from seed germination but in cultivation, bulbs can be large enough to flower within 5 years and normally bloom within 6 years. *Erythronium japonicum* occurs naturally throughout Japan but is rather rare in the west. Recently, its natural habitats have been decreasing because of land development; therefore, propagation by tissue culture has been adopted.

In Aichi prefecture, Asuke-cho is well known as having a large wild population and another population is reported around the Moor Imou in Toyohashi city.

In 1994, the late Takeshi Tomita found some *E. japonicum* growing spontaneously in his orchard of Japanese chestnuts at Ishimaki Nisikawa-cho, Toyohashi city. The site is on a north facing slope of about 30°, sunny in spring and changing to a forest floor as the trees leaf out during summer. These plants were left undisturbed and increased in number year by year and by 1972, the population was large enough to produce 300 flowers. In order to spread this colony over the entire slope, we tried to propagate by bulb division. As a result, the transplanted bulbs grew very well and increased considerably so that nowadays the slope is covered with flowers in early spring. But it proved difficult to grow them at other sites, they only grew well on sites where humidity was high such as around ponds. In other conditions they do not bloom every year, or disappear after several years. These results suggest that they are not tolerant of dry soil conditions.

In its original habitat, *E. japonicum* blooms from about the 20 March until 5 April every year. When propagation was started the plants showed no obvious variations, but variations are now apparent — there are two flower colors, purple and light purple. There are also differences showing up in the shape of the flowers, some with larger petals and others about twice the size. In 1998, we found a strain with yellow anthers, as opposed to the normal deep purple, which seems to be a sterile male clone. Most of these variations may be genetic because plants from the same bulb appear the same.

In early May seeds can be harvested. It has been reported that the seed germination rate of this species in the Kanto area was 70% to 90%. Although we tried to propagate by seed, the germination rate was less than 0.1%. At first, we speculated that the seed contained no embryo, however, we found normal embryos in the seeds, so we began experiments on seed germination. The seeds obtained in 1997 were stored in a plastic bag with soil from the sloping site and kept in the dark at 10C. They germinated 2% and 15% after 12 months and 15 months, respectively. This result suggests the possibility of a lack of chilling period for seed germination in Toyohashi. We will, therefore, investigate the effects of chilling on future seed germination.