

*Fritillaria eduardii* var. *inodora* typically has orange flowers, but *F. eduardii* var. *eduardii*, in the background, often has deep red flowers



# Cultivating *Fritillaria* *eduardii*

Now recognized as a species in its own right, *Fritillaria eduardii* flowers earlier than *F. imperialis* and has brighter flower colour. WILLEM WIETSMA and RONALD VAN DEN BERG discuss the species and its cultivation

SOON AFTER ITS DISCOVERY in 1884, *F. eduardii* was relegated to being a synonym of *F. imperialis*, crown imperial, a species to which it is closely allied. However, it differs from crown imperial by the absence of the typical foxy smell. Another characteristic that makes it easy to recognize is that, in the very early stages of emergence, the flowers are already visible between the leaves.

Crown imperials are regarded as one of the most striking flowering bulbs in our gardens in spring. However, *F. eduardii* can easily compete as it flowers two weeks earlier and has a much brighter flower colour.

## **Section *Petilium***

*Fritillaria eduardii* belongs to section *Petilium*, a group that was first considered as a separate genus and later reduced to a subgenus and section within the genus *Fritillaria*. The members of section *Petilium* differ from the other sections of *Fritillaria* in the top half of the stem being leafless with a clear tuft of leaves above the hanging flowers. Section *Petilium* consists of

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*Fritillaria eduardii* var. *inodora* emerging from the soil (left), and revealing its flowers at a short height (centre). Var. *inodora* is about 50-70cm high (right)

*F. chitralensis*, *F. eduardii*, *F. imperialis* and *F. raddeana* (Clark & Grey-Wilson 2003). The species belonging to section *Petilium* have a widespread distribution, from southeast Turkey, northeast Iraq, Turkestan, Iran, Baluchistan, Afghanistan and western Himalaya as far east as the Chenab Valley in India.

#### **Nomenclatural history of *F. eduardii* and its varieties**

Eduard Regel described *F. eduardii* in 1884 and since then there has been confusion over its name. Between 1878 and 1879 Albert Regel collected fritillaries in the mountains of Darwas and Baldschuan in Tajikistan and east Bukhara in Uzbekistan and introduced them to cultivation in Saint Petersburg, Russia. In 1884, four articles in which this new fritillary was discussed were published by his father Eduard Regel. The first three appeared in *Gartenflora* and the fourth in *Acta Horti Petropolitani*. The newly discovered species was described as a close relative of the well known *F. imperialis*, with a height of 30–60cm, a stem with

many leaves, and large purple-coloured flowers. Eduard Regel did not regard this new fritillary as belonging within *F. imperialis*. This was because of the lack of smell in both the bulbs and flowers and the shorter, leafless neck. The name *F. eduardii* had been proposed by Albert Regel in honour of his father, but it was Eduard who actually published the name in 1884.

In the later articles of 1884 the same plant was mentioned again, but it was now classified as a variant of *F. imperialis* and named “*Fritillaria imperialis inodora*” and “*Fritillaria imperialis* L. var. *inodora purpurea* Rgl”. This brown-purple-flowered fritillary had a shorter, leafless neck compared to cultivated *F. imperialis* and the flowers were initially, in the bud stage, more upright. Regel highlighted the horticultural value of these odourless forms from Bukhara.

In the final publication, in *Acta Horti Petropolitani*, two colour variants were distinguished, one with saffron-yellow, nodding flowers, and one with purple, erect or horizontal flowers. The article was illustrated by a plate with the legend “*Fritillaria Eduardi* A. Rgl.”, but Regel himself

indicated that this name should be abolished.

Later, in 1935, Losina-Losinskaja discussed *F. eduardii* in the *Flora of the USSR*. She described the plant as possessing an inodorous bulb and erect or declined flowers (not nodding as in *F. imperialis*) with a bright red perianth. She stated, ‘The species *F. Eduardii* was considered as synonymous with *F. imperialis* by Regel. It differs, however, markedly in perianth colour and the lack of nodding flowers, and should therefore be separated’. Therefore, this bright red variant came into cultivation as *F. eduardii*.

However, we concluded that two colour variants should be recognized. *Fritillaria eduardii* var. *eduardii* is the type variety and is about 60–70cm high with 3–7, purple-red or red, campanulate, pendent flowers (the colour is brownish red or purplish red, between 179A and 185A on the RHS Colour Chart, with relatively broad, dark purple veins). The other is *F. eduardii* var. *inodora* which is about 50–70cm high, with 3–9, yellow to orange, broadly campanulate, erect to pendent flowers (the colour is orange, 25A ►



*Fritillaria eduardii* var. *eduardii* at 15cm tall (above left) and at full height (above right)  
The outer tepals of *F. eduardii* var. *eduardii* (below left) and *F. eduardii* var. *inodora* (below right)



with relatively narrow, reddish purple veins) (Wietsma *et al.* 2011).

*Fritillaria eduardii* is native to Central Asia, particularly the mountain areas of Tajikistan, Uzbekistan, Kyrgyzstan and probably Afghanistan.

**Breeding and propagation**

Besides the orange and purple-red types, many intermediate flower colours exist. They are best regarded as hybrids between var. *eduardii* and var. *inodora*.

The VOF de Keizerskroon nursery in the Netherlands has been breeding and selecting *Fritillaria* cultivars since 1978. Initially, only *F. imperialis* was used but in 1984–85 seed from the other species of section *Petilium* was obtained from botanical gardens. The problem with bulbs raised from seed of wild accessions is that they are not adapted to thrive on well-fertilized nursery soil. Many bulbs were lost to *Fusarium* bulb rot.

Recent selection on well-adapted genotypes of *F. eduardii* is yielding new cultivars that will be available in

**KEY TO SPECIES OF SECTION PETILIUM**

Supplementing an earlier treatment of this section (Clark & Grey-Wilson 2003), we provide here a complete key to all the taxa now recognized within it.

<b>1a</b>	Nectaries small, <3mm diameter	<b>2</b>
<b>1b</b>	Nectaries larger, >3mm diameter	<b>3</b>
<b>2a</b>	Flowers normally 1–4, broadly campanulate, bright yellow	<b><i>F. cbitalensis</i></b>
<b>2b</b>	Flowers normally 5–20, conical to narrowly campanulate, pale straw coloured or greenish-yellow	<b><i>F. raddeana</i></b>
<b>3a</b>	Nectaries medium-sized, 3–4mm diameter; plant not foetid	<b>4</b>
<b>3b</b>	Nectaries large, 5–6mm diameter; corolla not widely flared, narrowly to broadly campanulate, orange-red, reddish-brown, red or yellow; plant foetid	<b><i>F. imperialis</i></b>
<b>4a</b>	Corolla not widely flared, narrowly campanulate, purplish red	<b><i>F. eduardii</i> var. <i>eduardii</i></b>
<b>4b</b>	Corolla widely flared, very broadly campanulate, soft clear orange to yellow	<b><i>F. eduardii</i> var. <i>inodora</i></b>



A *Fritillaria eduardii* hybrid with more reddish, rather than purplish-red, flowers



Colour variation in species and hybrids of *Fritillaria* section *Petilium* at VOF de Keizerskroon breeding facility in Midlum, the Netherlands

the near future. Unfortunately, the beautiful purplish red type remains very rare. The orange variety and orange-red hybrids are much more common because they are easier to propagate. The propagation technique used on these larger fritillaries is to make two or three cuts across the base of the bulb, to about halfway up the bulb, in July or August – this is their dormant stage in storage. The orange variety will produce 6–10 adventitious bulbs at the base of the bulb. The purplish red type does not produce adventitious bulbs and can only be maintained by seed. With seed it can take 6–8 years before the bulbs are large enough to flower, but propagation by cutting the bulb takes 2–4 years.

Breeders have also crossed *F. eduardii* with other species of

section *Petilium*. This has resulted in many new genotypes with mostly bright, orange-red flowers and promising characteristics such as forcing ability for cut-flower production. In the Netherlands, *F. imperialis* is forced in spring for cut-flower production like tulips, but its use is limited due to the foxy smell. Recently raised hybrids with *F. eduardii* are almost without this foxy smell and their use as cut flowers looks highly promising.

### Cultivation

*Fritillaria eduardii* bulbs are best grown in well-drained soil in a sunny spot; like many bulbs they dislike wet at the base. Avoid use of high-nitrogen fertilizers as this encourages the bulbs to get very large and makes them sensitive to *Fusarium* rot.

Protection or mulching over winter is not necessary as its mountain origin means it can withstand very low temperatures. Although it will thrive as a single specimen, *F. eduardii* associates well with other bulbs such as daffodils or tulips. It is also suitable for pot culture, where it will remain much shorter than *F. imperialis*, and, at a height of 15–20cm, the flowers will already be visible. After flowering the plant can be removed from the pot and planted in the garden where natural chilling helps it flower in subsequent years.

As the bulb is dormant during summer, care needs to be taken when digging at this time. However, if left undisturbed it will remain a garden treasure for many years.

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