

## THE VIOLA SPECIES COMMONLY GROWING IN AGROECOSYSTEMS IN CENTRAL ANATOLIA

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### Abstract

In this study, *Viola* species commonly growing around the fields in Central Anatolia were determined. The field trips for the study cover the years 1997-2001. As consequence of the study, it was determined that three *Viola* species, *Viola occulta* Lehm., *Viola kitaibeliana* Schult. and *Viola modesta* Fenzl., commonly grow in Agroecosystems in Central Anatolia. The brief descriptions, distribution maps in Turkey and the natural photos of the species were presented.

**Key words:** agroecosystems, *Viola* species, Central Anatolia, Turkey.

### INTRODUCTION

The *Violaceae* is a medium-sized family of perennial or rarely annual herbs or shrubs, including the violets or pansies. The family is cosmopolitan, but more typical of the temperate regions and tends to be restricted to higher mountainous areas. There are nearly 900 species belonging to 22 genera in the family. The genus *Viola* L. is the largest genus of *Violaceae*, has about 600 species which are widely distributed in the Northern Hemisphere (Heywood 1993, Ballard et al. 1999).

The genus *Viola* is represented by 34 taxa included in 32 species in Turkey (Dinç 2012). These taxa grow different habitats at different altitudes range from sea level to 3000 m. The aim of this study is to determine the *Viola* species commonly growing in the agroecosystems in Central Anatolia.

### MATERIALS AND METHODS

The field trips for the study were carried out the years 1997-2001. *Viola* samples were collected from cultivated lands along the study in Central Anatolia. The samples were dried according to the standard herbarium technics and identified according to the Flora of Turkey (Coode & Cullen 1965, Davis et al. 1988, Yıldırım 2000). The recorded species were photographed and the photos were presented.

The distribution map of the recorded *Viola* species in Turkey also was arranged based on the data from this study and Turkish herbaria.

### RESULTS AND DISCUSSIONS

The results of this study show that the three species *Viola occulta*, *Viola modesta* and *Viola kitaibeliana* commonly grow in the agroecosystems in Central Anatolia. The brief descriptions, distribution maps in Turkey and the natural photos of the species were presented below (Figures 1-4).

#### *Viola occulta* Lehm.

Annual herb. Stems erect, 2.5-25 cm. Leaves narrowly oblong-spathulate, remotely crenate-serrate, glabrous to sparsely hispid. Stipules deeply divided. Pedicels ebracteolate or with a minute bracteoles adpressed to the calyx. Sepals broadly lanceolate, 7-13 mm, as long as or longer than the corolla, their appendages completely exceeding the corolla spur. Corolla white to cream, 6-8 mm, sometimes the petals with bluish margins (Figure 1).

Flowering: March-April.

Fruiting: April-May.

Habitat: Cultivated lands, *Quercus*, *Juniperus* and *Pinus* forest at altitudes at altitudes 550-2200 m.

*Viola modesta* Fenzl

Annual herb. Stems erect, 2.5-13 cm. Leaves narrowly oblong-spathulate, remotely crenate-serrate, glabrous to hispid-scabrous. Stipules very small, entire or few-toothed. Pedicels ebracteolate or with a minute bracteoles adpressed to the calyx. Sepals broadly lanceolate, 4-12 mm, as long as or longer than the corolla, their appendages not exceeding the corolla spur. Corolla purple or yellow, exceeding the sepals, 7-15 mm (Figure 2).

Flowering: March-April.

Fruiting: April-May.

Habitat: Cultivated lands, stony places, rocky slopes, *Quercus*, *Juniperus*, *Abies* and *Pinus* forest at altitudes 100-1900 m.

*Viola kitaibeliana* Roem. & Schult.

Annual herb, stems 2.5-25 cm, the whole plant with a dense indumentum of short hispid-crisped hairs. Stem branched or unbranched at base, ascending or erect. Lowermost leaves orbicular, the rest oblong-spathulate, all crenately lobed. Stipules pinnatipartite, with an oblong-spathulate, crenately lobed, petiolate terminal segment, and smaller lateral segments. Peduncle bibracteolate just below the flowers. Sepals lanceolate, 4.5-9 mm. Corolla creamy-

white to yellow, with a yellow centre, the lowermost petal 7-11 mm (Figure 3).

Flowering: March-April.

Fruiting: May-June.

Habitat: Cultivated lands, steppe, stony slopes, screes, macchie, banks, *Juniperus*, *Pinus* and *Quercus* forest at altitudes 0-1900 m.

## CONCLUSIONS

This study show that the three *Viola* species *Viola occulta*, *Viola modesta* and *Viola kitaibeliana* commonly grow in the agroecosystems in Central Anatolia. However, the three species do not appear to damage the cultural plants because of their distribution at field margins.

## ACKNOWLEDGEMENTS

This study is the part of the project "A revision of the genus *Viola* in inner Anatolia". The author thanks to Scientific Investigation Project to Coordinate of Selçuk University (Project No. 05401046) for financial support.



Figure 1. *Viola occulta* in the field margin in Central Anatolia



Figure 2. *Viola modesta* in the field margin in Central Anatolia



Figure 3. *Viola kitaibeliana* in the field margin in Central Anatolia

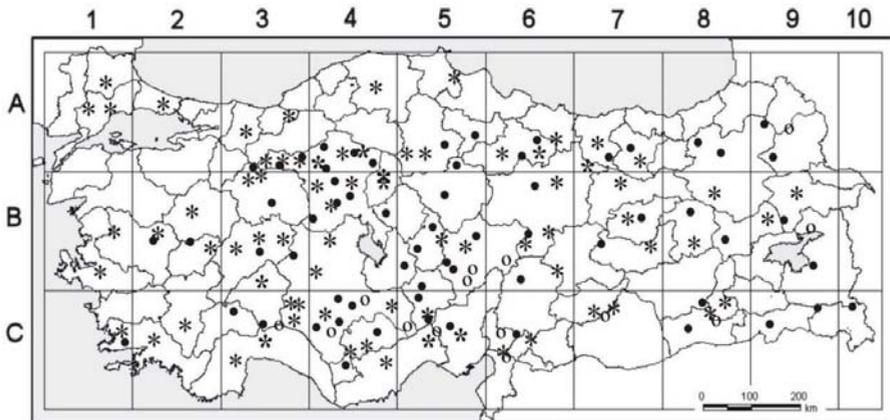


Figure 4. Distribution map of the *Viola* species commonly growing in agroecosystems in Central Anatolia. (●) *Viola occulta*, (○) *Viola modesta*, (\*) *Viola kitaibeliana*.

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