Research paper

Flaveria bidentis (L.) Kuntze (Asteraceae), a Newly Naturalized Plant in Taiwan

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【Abstract】We document the naturalization of Flaveria bidentis (L.) Kuntze (Asteraceae) in southern Taiwan. This is one of the many cases of New World plants invading Taiwan. A taxonomic treatment, line drawings, and color photographs of this species from the wild are provided to aid in identification of this alien plant. The colony of F. bidentis was first observed in Taiwan in 1987. During our field survey in 2008 we witnessed that the wild populations has adapted to the coast of Chiayi County.

【Key words】Asteraceae, Flaveria bidentis, Taxonomy, Naturalized plant, Taiwan

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INTRODUCTION

In recent years, many species of Asteraceae were naturalized in Taiwan (Boufford & Peng, 1993; Peng et al., 1998a; Peng et al., 1998b; Peng & Yang, 1998; Tseng & Peng, 2004; Hsu et al., 2006; Yang & Hsieh, 2006; Tseng et al., 2008). In this study we report yet another aggressive alien plant, Flaveria bidentis (L.) Kuntze on this island. Despite that it has been well established in the southern part of this island for more than 20 years, F. bidentis was not recorded in the second edition of Flora of Taiwan (Peng et al., 1998).

The genus Flaveria (Asteraceae) comprises 21 species native to North America, Mexico, with some species introduced to South America, Asia (India), Africa and Australia (Powell, 1978). Members of Flaveria are frequently found in alkaline, saline, and gypseous soils, often in disturbed and moist areas. In the United States, F. bidentis often occurs on ballast and waste ground near wharfs and the shore, locations that suggest its introduction from sailing vessels. The species is widespread and well established in South America (Cronquist, 1980).

TAXONOMIC TREATMENT


黃頂菊 Fig. 1. & 2.

Annuals, to 100 cm, robust, sparsely villous. Stems erect, often well-branched. Leaves shortly petiolate or subsessile; blades lance-elliptic, 5—12 × 1 — 2.5 cm, base connate, margin serrate or spinulose serrate. Heads 20 — 100 in tight subglomerules in scorioid, cymiform arrays. Involucre of 3 narrow, subequal, appressed phyllaries, with 2 additional small exterior ones. Receptacle small, glabrous. Ray floret 1, pistillate, fertile, sometimes wanting. Disc florets 3 — 8; perfect, fertile, corolla tubes ca. 0.8 mm, throats funnelform, 0.8 mm, 5-toothed. Anthers entire at the base. Style-branches of disk-floret truncate. Cypselae oblong or linear-oblong, 8-10-ribbed. Pappus 0. Somatic chromosome number, 2n = 36 (Shi et al., 2006).

Specimens examined: Taiwan. Chiayi County. Tungshih Hsiang(東石鄉), Aoku Village(鰲鼓農場), elev. ca. 10m, along Provincial Road #17, by Peikang River, 28 Aug. 1987, Peng 11143 (HAST); same loc., 6 Sep. 1987, Yen 1556 (HAST); same loc., 12 Aug. 1990, Peng 13462 (HAST); same loc., 1 Mar. 1994, Yen 9330 (HAST); same loc., 30 Apr. 2008, Tseng 4215 (TCF).
Fig. 1. Flaveria bidentis (L.) Kuntze. 1: Habit. 2: Leaf, adaxial surface. 3: Leaf, abaxial surface. 4: Head. 5: Phyllaries. 6: Disc floret. 7: Ray floret. 8: Cypsela.
Fig. 2. *Flaveria bidentis* (L.) Kuntze. A: Habit. B: Habitat. C: Inflorescences. D: Infructescences.
Notes: *Flaveria bidentis* (L.) Kuntze is native to North America and Mexico, with some species introduced to South America, Asia (India), Africa and Australia (Powell, 1978). Recently, it was naturalized in Japan (Ohta and Murata, 1995) and northern China (Liu, 2005). In Taiwan it has also been naturalized for more than 20 years at open areas, forming large populations at near sea level along the coast of Chiayi County (Fig. 3.). It flowers and sets fruits profusely in summer and autumn. We first witnessed a large colony of *F. bidentis* in 1987. During our field survey in 2008 we found that the wild populations of *F. bidentis* has been adapted stably to the coast of Aoku Village. This species is a highly dangerous exotic annual weed with very strong invasiveness, especially to ecosystems of croplands and grasslands in northern China (Gao et al., 2004). The potential of *Flaveria bidentis* to become rampant in Taiwan is worthy of alarming.

Fig. 3. Distribution of *Flaveria bidentis* (L.) Kuntze in Taiwan.

**LITERATURE CITED**


Austroeupatorium inulifolium (Kunth) King & Robinson (Asteraceae), a newly naturalized plant in Taiwan. Taiwania 51(1): 41-45.