

CONTRIBUTIONS TO THE FLORA OF ISRAEL.
 VI. *STIPAGROSTIS DRARII* AND *AMBROSIA CONFERTIFLORA* AND
TENUIFOLIA, NEW RECORDS FROM ISRAEL

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ABSTRACT

Stipagrostis drarii, found recently in sandy soils of the Arava Valley, is a typical component of sandy soils in extreme desert areas. It is adapted to sand mobility by having the ability to overcome up to 50 cm of sand-cover by producing new shoots from the axillary buds of the leafy culm and adventive roots from nodes close to the new soil surface.

Two species of *Ambrosia* which seem to be relatively new introductions to the flora of Israel are recorded here for the first time. It is not clear if these colonizing species will become established. However, judging from their way of dispersal by many small diaspores and efficient vegetative propagation they are potentially noxious weeds.

STIPAGROSTIS DRARII (TAECKHOLM) DE WINTER — A NEW RECORD FOR THE
 FLORA OF ISRAEL AND MORPHOLOGICAL ADAPTATIONS

Since its first description from a specimen collected in the Mitla Pass (Taeckholm, 1941), *Stipagrostis drarii* (Taeckholm) de Winter has been regarded as an endemic plant of Sinai. Its occurrence in Saudi Arabia was reported by Chaudhary (1989) and in Jordan by Baierle (1993). The first finding in Israel is one population represented by the following specimen, deposited in the herbarium of the Hebrew University of Jerusalem (HUI): Arava Valley: 5 km NE of Qtura Junction (ca. 50 km N of Elat), sandy soil, at the margin of a sand dune dominated by *Haloxylon persicum*, 1.10.1993, Danin.

Chaudhary (1989) notes that in Nafud and elsewhere it is a common grass on sand dunes and deep sand sheets, commonly associated with *Artemisia monosperma*. In the sandy-soil part of the Mitla Pass, the common dominant is *Anabasis articulata* (Danin, 1983). In Jordan, it is a companion in an association dominated by *Haloxylon persicum* (Baierle, 1993).

In a population of *S. drarii* we found in the Arava Valley, we observed morphological adaptations to growth in sand sheets where sand mobility is low, and in sand dunes, where sand mobility is high. Each ramet has the following morphology: the base of a main culm

has a brachyblastic section with 2–3-mm-long internodes at its 1.4–2-cm-long leaf-carrying basal part. An inflorescence terminates the culm, which has 3–4 internodes, each 2–4 cm long, subtended by the sheaths of the three leaves. There are buds at the axil of the 2nd through the 11th leaf. Once the main apex of the ramet turned into an inflorescence, lateral branches, similar in shape to the main branch, develop. Consequently, each ramet becomes a highly-branched sympodium.

According to these observations, there are two alternatives for response to the sandy environment. In plants not covered by sand, buds on the brachyblastic part of the stems give rise to new stems after the winter rains, rooting from the subterranean rhizome. In plants covered by a layer of sand, 5–50 mm deep, the bud close to the new soil surface sprouts, while the supporting adventitious roots develop from the node close to this point. The roots have a well-developed rhizosheath, which is regarded by many authors as an adaptation to the dry sandy environment (Price, 1911; Wullstein et al., 1979; Fahn and Cuteler, 1992).

TWO SPECIES OF *AMBROSIA* NEW TO THE ADVENTIVE FLORA OF ISRAEL

AMBROSIA CONFERTIFLORA DC.

Specimens seen: Israel, Coast of Carmel: 1 km NE of Zichron Yaacov, at the margin of a cultivated field, 23.1.1990, Danin (HUJ) and 25.10.1990, Danin (HUJ).

According to Payne (1964), *A. confertiflora* is "a perennial herb, perennating from base of stem or by means of adventitious shoots from roots, tending to form large clones". It was recently named for us by the staff of the Missouri Botanical Garden (Ms. P.J. Bernstein, pers. comm.). It is native to southwestern United States from Texas and Colorado to California, and throughout central Mexico. It is adventive in Puerto Rico, Hawaii, and Australia (Payne 1964; Bernstein, pers. comm.). Apparently it arrived in Israel a few years before 1990, as it was already well established locally when first found. Apart from an area of 10 × 20 m², where it formed a few clones by vegetative propagation, it was not found in any additional site in Israel.

AMBROSIA TENUIFOLIA SPRENGEL

Specimens seen: Israel, Sharon Plain: 2 km west of Hadera, roadside on muddy soil, 27.12.1991, Danin (HUJ).

In its growth form and vegetative propagation this species is rather similar to *A. confertiflora*. They differ in their female capitulae, which in the latter are armed with hooked spines, whereas those of *A. tenuifolia* are not hooked. Apart from the first collection site, it was not collected from any additional locality.

The two *Ambrosia* species are relatively new introductions to the flora of this area, and it is not clear if these weedy colonizing species will become established. Judging from their way of dispersal by many small units and efficient vegetative propagation, they are potentially noxious weeds.

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