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AVINOAM DANIN & HILDEMAR SCHOLZ

On the occurrence of two taxa of the *Setaria verticillata* complex in Israel and the Sinai

Abstract

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Two taxa of the *Setaria verticillata* complex can be readily distinguished in Israel: the diploid pantropical *S. adhaerens* (usually referred to as *S. verticillata*) is common as a weed, the polyploid temperate actual *S. verticillata* s.str. is a rare adventitious taxon, reported from Israel for the first time.

Basically two different views exist about treating the taxonomically problematic *Setaria verticillata* complex. Braun (1871), Henrard (1940), Romiger (1962), and Belo-Correia & Costa (1986, 1989), e.g., recognize within this complex, at least, two clearly distinguishable taxa, one being a pantropical diploid with glabrous leaf sheath margins, the other a temperate polyploid (tetra- or hexaploid) weed with ciliate leaf sheath margins. There has been some confusion about the correct names for the two taxa, but, as has been clarified by Henrard (1940) and Veldkamp (1994), the pantropical diploid is correctly named *S. adhaerens* (Forssk.) Chiov. (≡ *Panicum adhaerens* Forssk., lectotype (designated by Veldkamp 1994: 383): *Forsskål* in herb. Retzius (LD)), while the temperate polyploid is *S. verticillata* (L.) P. Beauv. s.str. (≡ *Panicum verticillatum* L., lectotype (see Belo-Correia & Costa 1986): Herb. Linnaeus 80.7 (LINN)).

In contrast, Stapf (1930), Clayton & Renvoize (1982), e.g., hold the view that the complex includes only one polymorphic species, *S. verticillata*, and the latter authors state (but do not demonstrate) that the two taxa delimited within this complex represent “only two of a number of intergrading populations” rather than being separated by clear morphological discontinuities.

When the first author, who has studied the flora and vegetation of Israel in the field for the past 35 years, noticed and collected there plants belonging to the *S. verticillata* complex and clearly deviating from the common taxon he is used to observe in moist secondary habitats in summer, the second author investigated their delimitation.

The investigations revealed, that also in Israel two taxa of the *S. verticillata* complex can be readily and consistently distinguished due to clear morphological discontinuities. The taxon that is a common weed in Israel for many decades and usually named as *S. verticillata* (Post 1933, Eig & al. 1931, 1948, Feinbrun-Dothan 1986, Feinbrun-Dothan & Danin 1991, Täckholm 1956, Bor 1968, Chaudhary 1989, Cope & Hosni 1991) was found actually to represent the pantropical *S. adhaerens*. The taxon that was recently discovered in Israel by the first author, on the other hand, could clearly be identified with the temperate *S. verticillata* s.str. This latter taxon was introduced to the country probably twice, in the 1960's and 1990's, it never became

widespread there and is still a rare plant at present, having not been reported so far from the "Flora Palaestina" area.

These two taxa of the *Setaria verticillata* complex can be keyed out as follows:

1. Plant ascending with a narrow, compact inflorescence; free margins of leaf sheaths hairy, blades glabrous; spikelets 1.8–2.2 mm long; bristles retrosely barbed with soft teeth hardly clinging to clothing *S. verticillata* (L.) P. Beauv.
- Plant prostrate with a loose wide untidily lobed short inflorescence; free margins of leaf sheaths glabrous, blades more or less loosely hairy; spikelets 1.5–2.0 mm long; bristles retrosely barbed with tough teeth clinging tenaciously to clothing
. *S. adhaerens* (Forssk.) Chiov.

Selected specimens seen (from the herbarium of the Hebrew University of Jerusalem, HUI):

S. verticillata (L.) P. Beauv. s.str.: ISRAEL: Esdraelon Plain, Sha'ar Ha'Amaqim, 1.6.1963, Zohary; Judean Mts, Kiryat Anavim, 6.7.1996, Danin; Jerusalem, 15.7.1996, Danin.

Setaria adhaerens (Forssk.) Chiov.: ISRAEL: Judean Mts, Jerusalem, 28.8.1911, Meyers 5176; Jerusalem, 4.7.1996, Danin; Sharon, Tel Aviv, 29.9.1923, Naftolksy; Kinnrot Valley, coast of Kinneret, 23.7.1923, Eig & Factorovsky; Upper Galilee, Wadi Tawahin, 6.6.1926, Eig & Zohary; Dead Sea Valley, Ein Gedi, 24.3.1926, Eig, Zohary & Feinbrun; Arava Valley, Eilat, 2.9.1982, Liston; Negev Highlands, Sde Boqer, 8.2.1982, Danin & Liston. — EGYPT: SINAI: Holit, 23.7.1981, Danin, Weinstein & Karschon; Sadot, 23.7.1981, Danin, Weinstein & Karschon; Neviot, 14.7.1981, Danin; 7 km SW of St Catherine Monastery, Wadi Gibal, 12.10.1968, Shmida.

In the light of the above outlined controversy it may, of course, be debatable whether the two taxa actually deserve species rank. We think, however, that a decision about the appropriate ranking of the taxa should be preceded by careful studies of the corresponding *Setaria* material in other countries, in order to better understand the two taxa and their variation, and it is the intention of this short note to stimulate such studies. We may also remind that Veldkamp (1994) stated the existence of undescribed taxa of the *Setaria verticillata* complex in, e.g., SE Asia.

References

- Bela-Correia, A. L. & Costa, M. F. 1986: *Setaria verticillata* (L.) P. Beauv. e *Setaria adhaerens* (Forssk.) Chiov. 1. – Revista Biol. (Lisbon) **13**: 117–143.
- & — 1989: *Setaria verticillata* (L.) P. Beauv. e *Setaria adhaerens* (Forssk.) Chiov. I. Aditamento. – Bol. Soc. Brot., Sér. 2, **62**: 289–290.
- Bor, N. L. 1968: *Graminae*. – In: Townsend, C. C., Guest, E. & Al-Rawi, A. (ed.), Flora of Iraq **9**. – Baghdad.
- Braun, A. 1871: *Panicum (Setaria) adhaerens*. – Pp. 5–8 in: Appendix plantarum novarum vel minus cognitarum quae in horto regio botanico berlinensi coluntur. – Index Seminum (Berlin) **1871**.
- Chaudhary, S. A. 1989: Grasses of Saudi Arabia. – Riyadh.
- Clayton, W. D. & Renvoize, S. A. 1982: *Graminea* (part 3). – In: Polhill, R. M. (ed.), Flora of Tropical East Africa. – Rotterdam.
- Cope, T. A. & Hosni, H. A. 1991: A key to Egyptian grasses. – Kew & London.
- Eig, A., Zohary, M. & Feinbrun, N. 1931: The plants of Palestine, an analytical key. – Jerusalem.
- , — & — 1948: Analytical flora of Palestine, ed. 2. – Jerusalem.
- Feinbrun-Dothan, N. 1986: Flora Palaestina **4**. – Jerusalem.
- & Danin, A. 1991: Analytical flora of Eretz Israel. – Jerusalem.

- Henrard, J. Th. 1940: Notes on the nomenclature of some grasses. – *Blumea* **3**: 411–480.
- Post, G. E. (ed. Dinsmore, J. E.) 1933: Flora of Syria, Palestine and Sinai, ed. 2. – Beirut.
- Rominger, J. M. 1962: Taxonomy of *Setaria* (*Gramineae*) in N America. – Illinois Biol. Monogr. **29**.
- Stapf, O. 1930: *Setaria*. – Pp. 768–866 in: Prain, D. (ed.), Flora of Tropical Africa **9**. – Ashford.
- Täckholm, V. 1956: Students flora of Egypt. – Cairo.
- Veldkamp, J. F. 1994: Miscellaneous notes on southeast Asian *Gramineae*. IX. *Setaria* and *Paspalum*. – *Blumea* **39**: 373–384.

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