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Notes on *Aegilops (Poaceae)*

Abstract

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A variant (mutant) of *Aegilops biuncialis* with non-shedding spikes, var. *tenacissima,* is described as new to science and its origin from the diaspore of var. *biuncialis* documented. Included are short critical remarks on diaspore definition of *A. biuncialis.*

Key words: *Gramineae, Triticeae, Aegilops biuncialis,* mutation, spikes, diaspores.

In the tribe *Triticeae* Dumort. of the family *Poaceae* the inflorescences/fructescences are spikes (ears), i.e. sessile or nearly sessile spikelets distichously and mostly singly arranged along an axis, the rachis of the spike terminating with or without an apical spikelet. In the fruiting state of non-cultivated wild and weedy species, for instance of the annual genus *Aegilops* L., the spike readily disintegrates along preformed abscission sites, resulting in species-specific dispersal units with smooth fracture scars in three modes: (a) entire spike, (b) single spikelets or florets, and (c) spiculate rachis segments of the spike. In the last case the rachis disarticulates either directly below its nodes at the insertion "points" of spikelets ("barrel type", rachis internode laterally fixed at the spikelet base, Fig. 1A) or above the nodes at bottom of the rachis internode ("wedge type", rachis internode attached to the next higher spikelet base, Fig. 1B).

As far as the dispersal mode of *Aegilops biuncialis* Vis. (= *A. lorentii* Hochst., tetraploid, $2n = 28$) is concerned, all authors ascribe to it the mode (a): "whole spike falls as one unit" or "inflorescence ... disarticulating as one unit at maturity with the rudimentary spikelet(s) remaining attached to the culm" (Slageren 1994: 135, 152). However, the small rudimentary spikelets (Fig. 2D) "remaining attached to the culm" are parts of the spike, and therefore the common view that the whole, entire spike is the unit of dispersal seems somewhat misleading. In reality, *A. biuncialis* sheds as a unit (diaspore, propagule) only the main fertile long portion of the spike. Its lower persistent segment – bearing the fertile spikelets, below which the supporting rachis of the lowest spikelet appears as a wedge-shaped prolongation – leaves behind, after shedding, 1 (or 2) rudimentary spikelets attached to the lowest non-fractured portion of the rachis at the culm tip. The flat and more or less hairy rachis internodes contrast markedly with the cross-sectional round and hairless culm axis. This correction is not the main concern of the present paper but a prerequisite for the following.

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Fig. 1. *Aegilops,* schematic presentation of two modes of spike disarticulation – A: spike disarticulating in dispersal units of the "barrel type"; B: spike disarticulating in dispersal units of the "wedge type".

Aegilops biuncialis var. ***tenacissima*** H. Scholz, **var. nov.**
Holotype: Greece, E Aegean Islands, Nomos of Dodekanisos, Eparchia of Rhodos, c. 0.2 km NE Salakos, Wegrand, c. 150 m, 16.5.2004, *Ristow & Doyle 601/04* (B). – Fig. 2A-C.

Differt ab *Aegilopside biunciali* var. *biunciali* rhachidi spicae tenacissima, spiculis rudimentariis sub spiculis fertilibus inferioribus abortivis.

The collection consists of three flowering culms 15-20 cm high, two of them (not the holotype!) taken from lateral basal shoots; spikes (without awns) about 2 cm long; lower spikelets two and well-developed; the awns of the lower spikelet distinctly shorter than those of the upper spikelet, 2 cm and 3 cm long, respectively; rudimentary spikelets and nodes below the fertile spikelets absent; the neck of the spike even and glabrous, without any articulation, tightly connected to the spike rachis (Fig. 2B).

Aegilops biuncialis var. *tenacissima* germinated from the previous year's dispersal unit (diaspore) of var. *biuncialis*. The identifiable dispersal remnant at the culm base of var. *tenacissima* (Fig. 2A, C), gathered from the soil surface, clearly does not belong to var. *tenacissima* but to var. *biuncialis.* Apparently var. *tenacissima* arose by mutation from var. *biuncialis*. The tetraploid *A. biuncialis* with different chromosome types is a variable species, probably by introgression of genetic material from other species (Badaeva & al. 2004).

"Presence or absence of rudimentary spikelets at the base of the spike .... is one of the most important and most constant characters" in *Aegilops* (Eig 1929: 44, translated from German). The non-shedding spike of *A. biuncialis* var. *tenacissima,* spontaneously arisen, is an extraordinary character in the weedy *A. biuncialis,* never noticed so far, and of great theoretical interest. Unlike the first domestic cereals of the genus *Triticum* L., closely related to *Aegilops,* arisen from mutants that have non-disarticulating spikes (Tanno & Willcox 2006), there is no need for *A. biuncialis* var. *tenacissima,* if it should be found elsewhere in future, to be taken into cultivation in order to ensure its survival.

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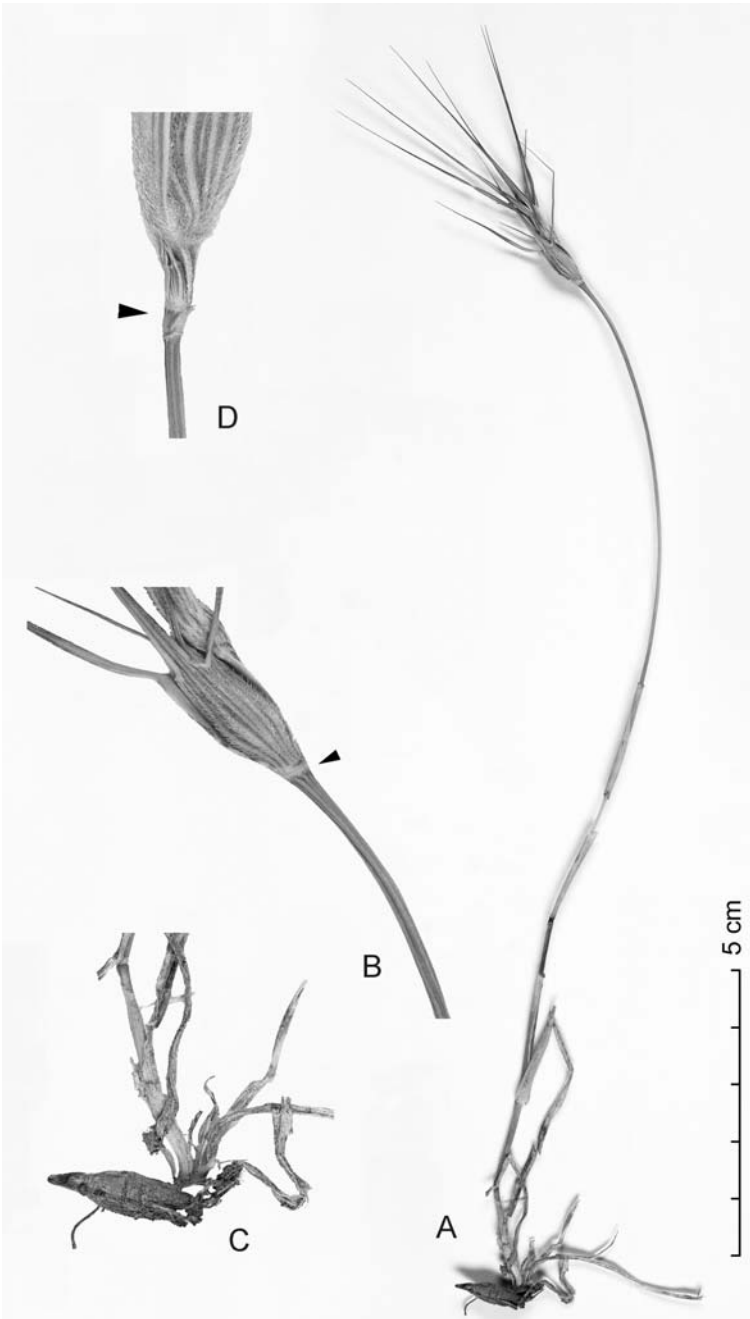


Fig. 2. *Aegilops biuncialis* – A-C: var. *tenacissima;* A: holotype; B: upper part of the holotype; base of spike firmly connected to the culm, rudimentary spikelets absent; C: culm base of the holotype; the remnant of the mother plant's spike (var. *biuncialis*) with a short wedge-shaped basal rachis internode (left) detached from the rachis internodes with 1 (or 2) rudimentary spikelets; D: var. *biuncialis,* Rhodos, 20.4.2004, *Scholz;* base of the spike with 2 rudimentary spikelets.

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