Girolamo Giardina

Dichanthium annulatum (Forssk.) Stapf. new to Europe

Abstract

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The finding of *Dichanthium annulatum* (Forssk.) Stapf. In the territory of Adrano (E. Sicily) is reported. Morphological characters and ecology of this species, new to Europe, are also given and compared with the *D. insculptum* (A. Rich.) Clayton ones, this latter taxon being native to Sicily.

The genus *Dichanthium* Willemet includes several species mainly spread throughout the Old World tropics and Australia. According to Clayton (1980) in Europe this genus is represented by *D. ischaemum* (L.) Roberty, occurring throughout the mainland, and by *D. insculptum* (A. Rich.) W. D. Clayton being present only in Sicily and Africa. This latter species is not mentioned in Italian floras (Pignatti 1982). Among the taxa known as occurring in Africa there are also *D. bladhii* (Retz.) W. D. Clayton and *D. annulatum* (Forssk.) Stapf.

In September 1996 a population of *D. annulatum* has been found in a clayish area in the territory of Adrano (E. Sicily). Given the interest of this species which is new to the European flora, a description of its main morphological characters together with a new iconographic plate and some information on the location and ecology is provided. Furthermore, a morphological comparison between *D. annulatum* and *D. insculptum* is made. This, in order to facilitate other field records at least in other Sicilian localities where *D. annulatum* is likely to occur.

The question whether this species is alien or native to Sicily is not considered here. However, as regards its taxonomical identity, the population found in Sicily undoubtfully belongs to *D. annulatum* since the morphological characters observed in both dried specimens and living individuals agree with literature and herbarium data. The following description, referring to the Sicilian population, substantially corresponds to the latin one provided by Boissier (1884) on the basis of the original description (sub *Andropogon annulatus*) by Forsskål "perennial; caespitose, fibrous root; erected or ascendent culms, simple or branched, in their nodes long-bearded; glaucous, linear, plane leaf-blades, in the lower page sparsely pilose; ligule shortly truncate, with 2-6 digitated and linear spikes; rachis and pedicels pilose; spikelets oblong, obtuse and plane in their back; lower floret reduced to the lemma. Glumes subcoriaceous, oblong-linear in the edge and sometimes

ciliate in the back, the lower one obtuse and multi-nerved, the upper acute and almost without nerves, Lemma reduced to the awn alone, twisted in its inferior part and geniculate, six times longer than the spikelet, palea nulla, spikelet pedicelled male or sterile not awned".

Regarding the discrimination among *D. annulatum* and some other taxa likely occurring together in Italy and in N. Africa, it can be considered that *D. annulatum* differs from both *D. ischaemum* and *D. bladhii* (Retz) W. D. Clayton (distribution: throughout the Old World tropics (Clayton 1977)) because of the long-bearded nodes in the culm, naked and short pilose in *D. ischaemum* and simply pubescent in *D. bladhii.* Moreover the species has a fibrous, caespitose roots whereas this is creeping in *D. ischaemum*; in addition the awns are very long in *D. annulatum* and short in *D. ischaemum. D. bladhii* is almost creeping habit whereas the other species is well erected, with a robust culm (but geniculate in lower part). Moreover the glume of the sessile spikelet is clearly tridenticulate in the higher edge in *D. bladhii*, whereas it is simply obtuse in *D. annulatum.*

As the morphological differences between *D. annulatum* and *D. insculptum* in sicily are concerned, they are synoptically represented in the Table 1.

Table 1. Morphological comparison between *D. annulatum* and *D. insculptum*

Character	*D. annulatum*	*D. insculptum*
Length of leaf-blade	8 to 30 cm	from 25 to 30 cm
Ring of piles around the node	present	absent
Short piles at the base of leaf-blade	some, length 2 mm	absent at all
Piles long 5 mm at the base of leaf-blade	few	many
Distribution of piles on the glume of sessile spikelet	on all the glume	only in the lower half part
Piles on the glume pedicelled spikelet	pilose	acute denticules 0.2 mm (glabrous look)
Presence hole on lower glume sessile spikelet	absent	present
Presence hole on lower glume pedicelled spikelet	absent	present
Section pedicelled spikelet	about as the sessile one	narrower than the sessile one
Nerves lower glume pedicelled spikelet	visible in fresh, not in dried	visible in fresh and in dried
Length awn including the lemma	ca. 19 mm	ca. 17 mm

In addition, the same discriminant characters are partly put in evidence by comparing the illustrations of *D. annulatum* (Figs. 1, 3) and *D. insculptum* (Fig. 2). Other meaningful differences concern the inflorescences which are verticillate racemes in *D. annulatum*, and assembled in a common axis (primary rachis). As regards the ecology, the two species are different: *D. insculptum* needs arid habitats, while *D. annulatum* grows in humid habitats but it is not disturbed by an intense evapo-transpiration of the soil.

Their preferred sites are near little canals and some other artifacts for field irrigation. More detailed ecological information on the Sicilian population of *D. annulatum* can be assumed from the characteristics of the place where it has been found.

Fig. 1. *Dichanthium annulatum* (Forssk.) Stapf.: **A,** the whole plant almost at the end of its vegetative activity; **B,** sessile spikelet implanted on the rachis with on the background the pedicelled spikelet; **C**, pedicelled spikelet in both ventral and dorsal view; **D,** ovary with bearded styli; **E,** leaf base.

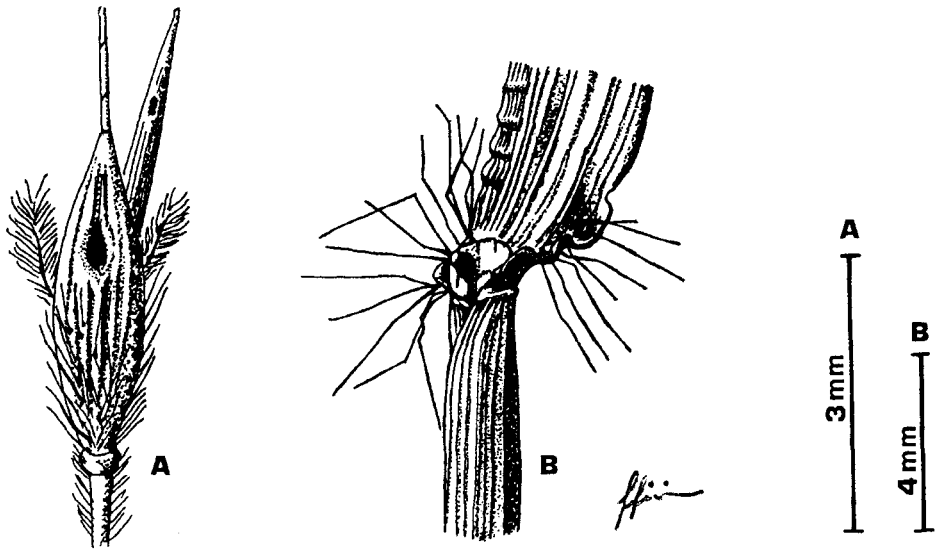

Fig. 2. *Dichanthium insculptum* (A. Rich.) W. D. Clayton. Some particulars differentiating *D. insculptum* from *D. annulatum* are put in evidence. Note in **A**: the holes both on the sessile spikelet and on the pedicelled one, the styli long-bearded, the inferior glume of the sessile spikelet covered by hairs only in the half lower part, the pedicelled spikelet very small. Note in **B**: the abundance of long hairs at the base of the leaf blade.

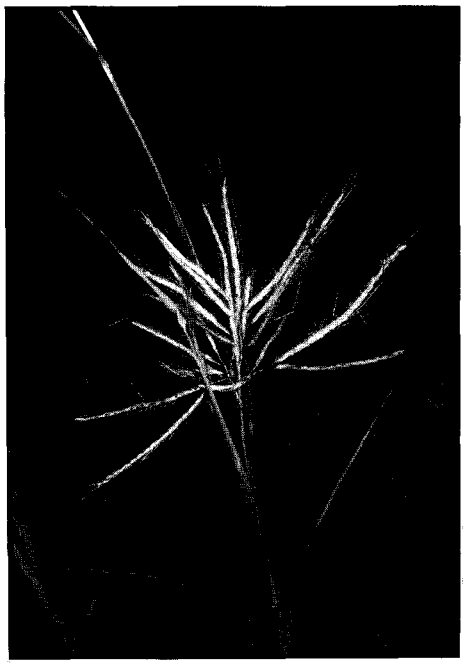

Fig. 3. Inflorescence of *Dichanthium annulatum*.

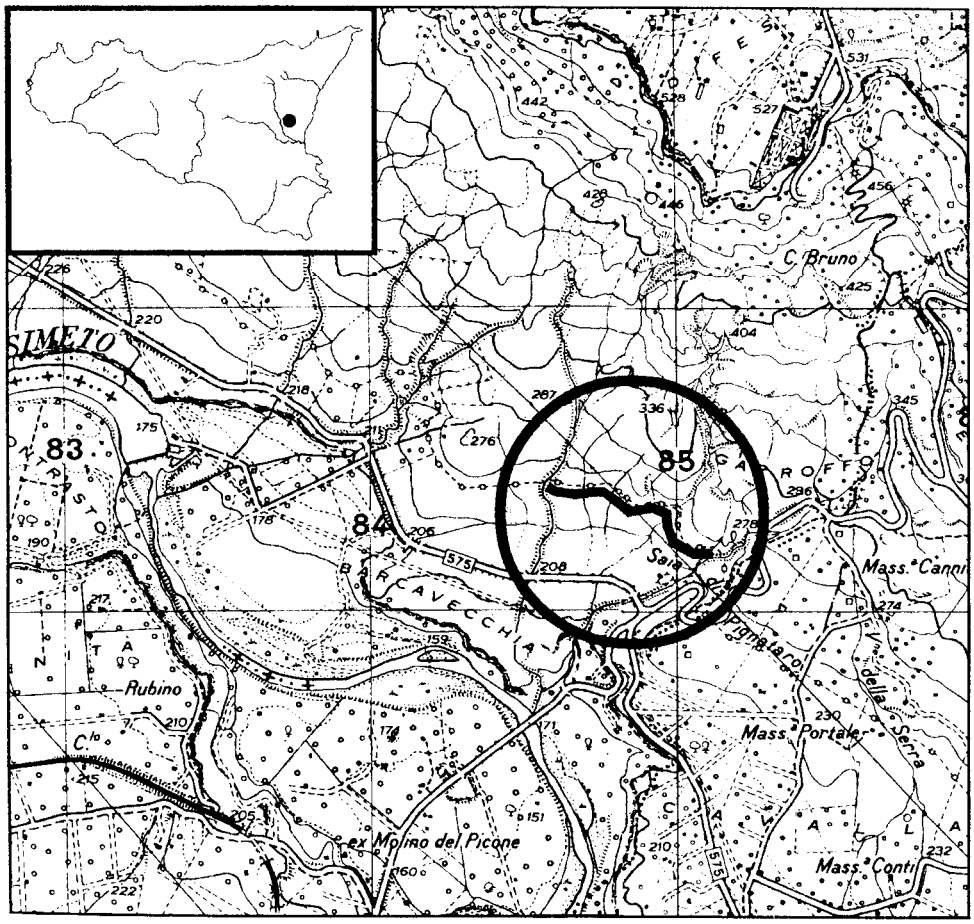

Fig. 4. Cartographic placement of the population of *Dichanthium annulatum* near Adrano. The black irregular line shows the Saja Pignataro for a length of about 350 m.

This site is located in the territory of Adrano (E. Sicily), in "Contrada Garroffo", throughout the edges of the Saja Pignataro, which is a canal about 350 m long at 270 m s.l., (cartographic reference IGM Scale 1:25000, Sheet 269 I N.E. (Adrano) and 269 I N.O. (Centuripe) (Fig. 4)) that carries water from the Simeto river to some cultivated fields for irrigation purposes. The geology is characterized by clay basement on which the basalts of the volcanic building of Mount Etna rises. The area has a pronounced acclivity and is crossed by some polluted water-courses coming down from some inhabited sites located at a higher level on the slopes, among which there is also the little town of Adrano.

Along the Saja Pignataro *D. annulatum* grows among the tufts of *Cymbopogon hirtus* (L.) Janchen, *Inula viscosa* (L.) Aiton, and some other synanthropic species whose ecology is somewhat depending on moist soils, as for instance *Phragmites australis* (Cav.) Trin., *Panicum repens* L., *Cyperus laevigatus* L., *Juncus acutus* L., *Verbena officinalis* L., *Cirsium creticum* (Lam.) D'Urv. subsp. *triumfetti* (Lacaita) Werner, *Rumex crispus* L., etc. In fact, among the species belonging to the genus *Dichanthium* certainly *D. annulatum*

shows a major aptitude for the anthropized places, that are the typical habitats where it occurs throughout its large distribuion area including Morocco, Egypt, boreal Africa either mediterranean and sub-saharian (Sudan and Etiopia), Iran, Cape Verde, South-Africa, India and Australia.

A specimen of *D. annulatum* from the Saja Pignataro is kept in the Herbarium Mediterraneum of Palermo (PAL).

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Address of the author:
Prof. Girolamo Giardina, Via Lorenzo Bolano 4, I-95122 Catania, Italy.