

ARRHENATHERUM NEBRODENSE, A NEW SPECIES FROM SICILY

SALVATORE BRULLO, PIETRO MINISSALE & GIOVANNI SPAMPINATO

Abstract

Arrhenatherum nebrodense a new species occurring in Sicily is described and illustrated. It is a nemoral geophyte frequent in deciduous oak woods or more rarely in shrubs communities. Its relationships with the more closely related taxa of the genus *Arrhenatherum* are discussed.

Introduction

According to literature data (RECHINGER, 1943; KERGUÉLEN, 1975; HOLUB, 1980; PIGNATTI, 1982; ROMERO-ZARCO, 1985, 1987; FEINBRUN-DOTHAN, 1986; DOGAN, 1985), the genus *Arrhenatherum* Beauv. is represented in the Mediterranean area by several taxa, some of which result quite critical and need of further investigations; they are: *A. elatius* (L.) Beauv ex J. & C. Presl subsp. *elatius*, *A. elatius* subsp. *sardoum* (E. Schmid) Gamisans, *A. elatius* subsp. *baeticus* Romero-Zarco, *A. elatius* subsp. *braun-blanquetii* P. Monts. & L. Villar, *A. bulbosum* (Willd.) C. Presl, *A. murcicum* Sennen, *A. album* (Vahl) W.D. Clayton, *A. erianthum* Boiss. & Reuter, *A. almijarensense* Gand., *A. riofrioi* Sennen, *A. palaestinum* Boiss. and *A. kotschyi* Boiss.

As concerns the Sicilian flora, PRESL (1820), GUSSONE (1843), PARLATORE (1845), LOJACONO-POJERO (1909) and FIORI (1923) quoted from Sicily *A. elatius* and *A. bulbosum* (the latter treated normally as a variety of the former), while PIGNATTI (1982) recorded in Sicily only *A. elatius* subsp. *erianthum*. From the herbarium and field investigations effectively the genus *Arrhenatherum* is represented by *A. elatius* subsp. *elatius*, which is an oro-nitrophylous plant, *A. elatius* subsp. *sardoum*, new record from Sicily localized on scree of Madonie territory and finally a very peculiar plant occurring in various localities of the island. For the occurrence of one tubercle in the basal internode and of a few flowered inflorescence, the last one shows some relationships mainly with *A. elatius* subsp. *baeticus* from Iberian Peninsula and *A. palaestinum* from E-Mediterranean region. Numerous morphological characters allow to distinguish very well this Sicilian plant from the other known taxa of *Arrhenatherum* and therefore it is described as a species new to science.

***Arrhenatherum nebrodense* Brullo, Minissale & Spampinato, sp. nova (Fig. 1)**

Herba perennis, caespitosa. Culmi glabri, 30-70 cm alti, basi geniculati, tuberculo singulo 5-15 x 8-12 mm in internodo inferiori, raro 2 tuberculis. Vagina foliorum inferiorum sparsis pilis setosis, superiorum glabra. Lamina foliorum plana vel leviter involuta, 4-18 cm longa, 3-5 (6) mm lata, inferior pilis setosis in superficiebus ambabus,

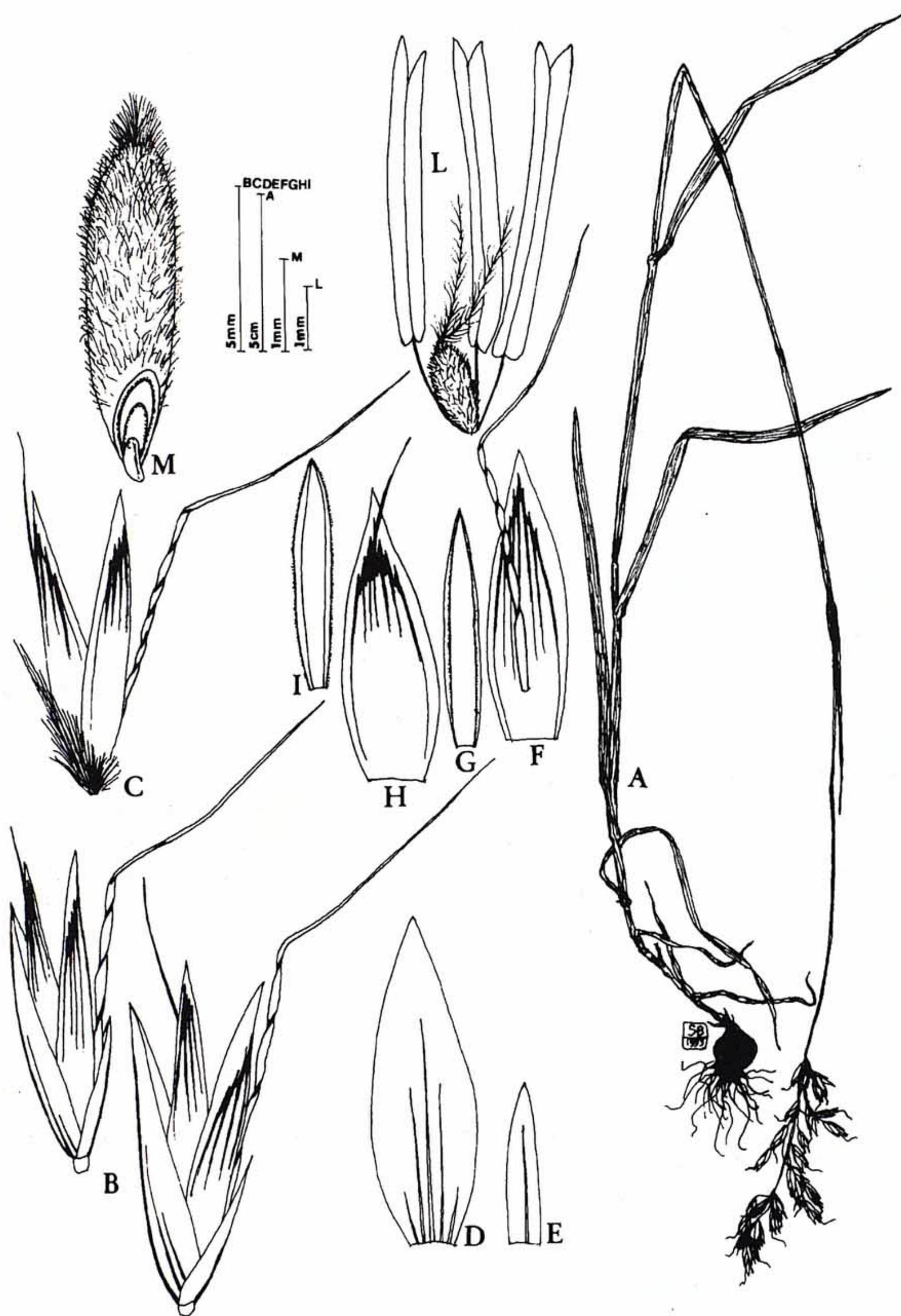


Fig. 1. *Arrhenatherum nebrodense* Brullo, Minissale & Spampinato. A, habit; B, spikelets; C, florets; D, upper glume; E, lower glume; F, lemma of lower floret; G, palea of lower floret; H, lemma of upper floret; I, palea of upper floret; L, ovary and stamens; M, grain.

superior densis pilis setosis 1 mm longis solum in superficie ventrali. Ligula membranacea, inciso-lacerata superne, 1-5 mm longa. Panicula 5-12 cm longa, (7) 10-45 (60) spiculas ferens, ramis 1-40 mm longis, breviter piloso hispidis praecipue superne. Spiculae 2 floribus, 10-12 mm longae. Glumae virides violaceo-suffusae, acutae, inferiores 4,5-5 mm longae, 1 mm latae, 1-nervatae, lineari-subulatae, superiores 9-10 mm longae, 5-nervatae, ovato-lanceolatae. Flos inferior sessilis, callo pilis 1,5 mm longis praedito, lemnate 7-nervata, 8,5-9 mm longa, acuta, glabra, dorsaliter cum arista geniculata 16 mm longa, torta in dimidio inferiore, supra basin inserta, palea lineari-elliptica 7 mm longa, ciliata in nervationibus. Flos superior pedicello 0,5-0,6 mm longo, pilis 5 mm longis praedito, lemnate glabra, 7-nervata, 8,5-9 mm longa, acuta, nervo medio prolungato prope apicem in setam 1-3 mm longam (interdum absentem). Antherae luteae, 5 mm longae, filamentum 1 mm longo. Ovarium pilosum, 1,5 mm longum, stigmatibus setosis, 2,5 mm longis. Caryopsis pilosa, 4 mm longa.

Typus. Sicilia, Nebrodi, Boschi presso Capizzi, 26.6.1990, *Brullo, Minissale & Spampinato* (Holotypus: CAT; Isotypi: CAT, FI, PAL).

Specimina visa

SICILIA. **Nebrodi.** Valle del Flascio, 13.6.1974, *Brullo & Grillo* (CAT); ibid., Serra del Re, 24.6.1979, *Brullo* (CAT); ibid., sopra Cesarò, 29.5.1982 *Brullo* (CAT); ibid., faggeta di Caronia, 5.7.1983, *Brullo* (CAT); ibid., Portella Gazzana, 4.6.1986, *Brullo* (CAT); ibid., Galati Mamertino, 4.6.1986, *Brullo* (CAT); ibid., Boschi presso Capizzi, 26.6.1990, *Brullo, Minissale & Spampinato* (CAT, FI, PAL); ibid., torrente fra Capizzi e Portella dell'Obolo, 26.6.1990, *Brullo, Minissale & Spampinato* (CAT). **Madonie.** Pomieri, 9.6.1984, *Brullo* (CAT); ibid., 10.6.1984, *Brullo* (CAT); ibid., 1.6.1986, *Brullo* (CAT); ibid., Pizzo Carbonara, 1.6.1986, *Brullo* (CAT); ibid., 1.6.1988, *Brullo* (CAT); ibid., 5.6.1990, *Bartolo et al.* (CAT); ibid., Vallone Chiuso, 2.6.1992, *Brullo, Cocomero, Scelsi* (CAT); ibid., rifugio Piero Merlino, 31.5.1986, *Bartolo, Brullo & Minissale* (CAT); ibid., Quacella, 9.6.1983, *Brullo* (CAT); ibid., 1.6.1988, *Brullo* (CAT); **Sicilia occidentale.** M. Pizzuta, 29.5.1973, *Brullo* (CAT); ibid., Piana degli Albanesi, 25.5.1986, *Minissale* (CAT); Rocca Busambra, 31.5.1975, *Brullo* (CAT); ibid., 16.6.1980, *Brullo* (CAT); ibid., 4.6.1988, *Brullo & Minissale* (CAT); ibid., 2.6.1990, *Spampinato* (CAT); M. Kumeta, 4.6.1988, *Brullo & Minissale* (CAT). **Monti Sicani.** Monte delle Rose, 1.6.1990, *Spampinato* (CAT). **Peloritani.** Fiumara Fiumidinisi, Santuario della Santissima, 11.6.1985, *Spampinato* (CAT). **Etna.** Bronte, Ciapparazzo di Dragofora, 20.5.1995, *Brullo & Siracusa* (CAT); **Iblei.** Superstrada per Ragusa presso il bivio per Comiso, 24.5.1988, *Minissale* (CAT); Cassibile, Cava Grande, 5.6.1975, *Brullo* (CAT); M. Lauro presso Vizzini, 28.6.1983, *Brullo* (CAT).

Ecology and distribution

Arrhenatherum nebrodense is an orophilous species quite frequent at an altitude of 900-1500 m in the nemoral places, represented mainly by woodlands of deciduous oak or beeches. It occurs also in the mountain shrub communities and screes. It is a Sicilian endemic distributed prevalently in the northern mountain ranges (Madonie, Nebrodi, Peloritani, Sicani), while is quite rare in Mt. Etna and Hyblean territory (Fig. 2).

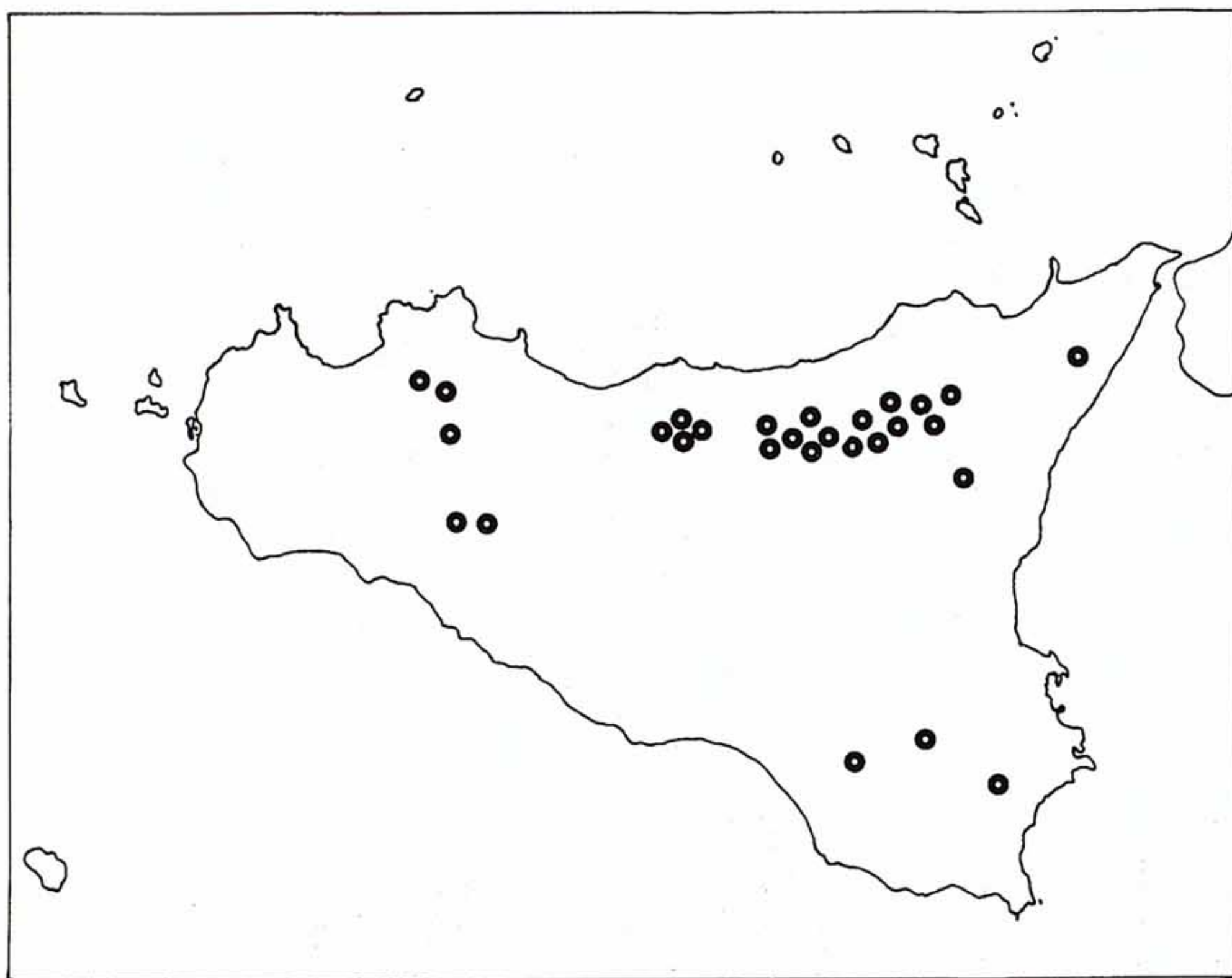


Fig. 2. Geographical distribution of *Arrhenatherum nebrodense*.

Taxonomic remarks

According to ROMERO-ZARCO (1985), by having an upper floret with a pedicel less than 1 mm long *Arrhenatherum nebrodense* belongs to the cycle of *A. elatius*, being the cycle of *A. album* characterized by upper floret with a pedicel at least 1 mm long. In a 1-2 tubercles at the base of the culm, short few-flowered panicle and upper floret with pedicel 0.5-0.8 mm long, *A. nebrodense* is similar to *A. elatius* subsp. *baeticum* distributed in the Iberian Peninsula, but it differs in several morphological characters and ecology. In particular *A. elatius* subsp. *baeticum* shows slender hypogeous stolons up to 4 cm long, 1-2 basal tubercles 4-8 mm in diameter, leaf blades convolute, 1-3 mm wide, glabrous or with sparse hairs 0.2-0.5 mm long, spikelets 6-8 mm long, lower glume elliptical-lanceolate, 5-5.5 mm long and 1.4-1.8 mm wide, upper glume 7-8 mm long, 3-veined, lower floret with callus covered by hairs 0.8-1 mm long, lemma 7 mm long with awn 12 mm long and palea 5-5.5 mm long, upper floret with pedicel covered by hairs up to 2 mm long and lemma 6-7 mm long, back covered by lax hairs 0.5 mm long, anthers 4 mm long, stigma 1,2 mm long, grain c. 3 mm long (Fig. 3). As concerns the ecology, it results localized in mountain meadows.

A. nebrodense shows some relationships with *A. palaestinum* from E-Mediterranean area too. The similarity consists in 1-2 basal tubercles, leaves flat and wide, lax few

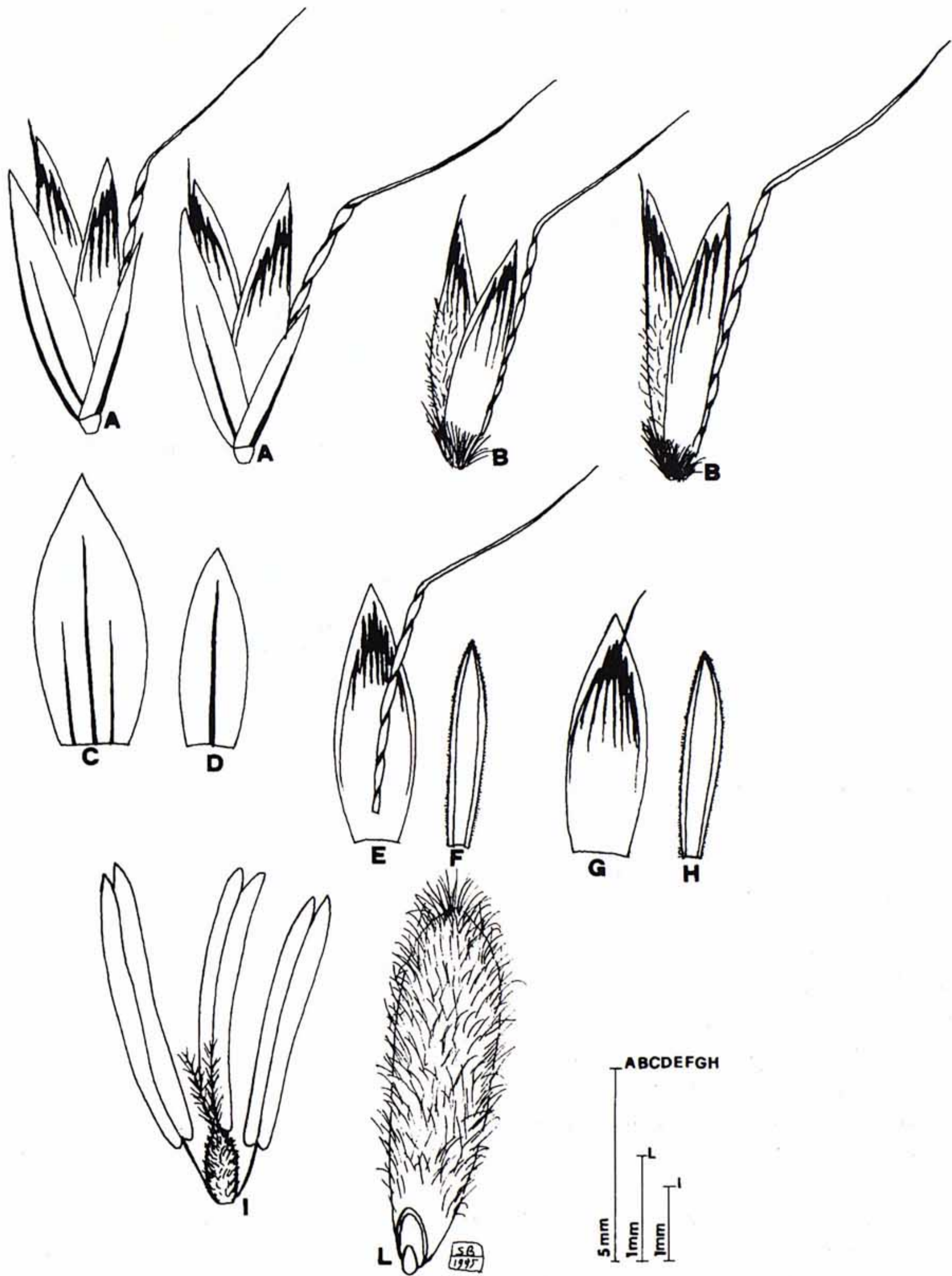


Fig. 3. *Arrhenatherum baeticum* (Romero Zarco) Brullo, Minissale & Spampinato. A, spikelets; B, florets; C, upper glume; D, lower glume; E, lemma of lower floret; F, palea of lower floret; G, lemma of upper floret; H, palea of upper floret; I, ovary and stamens; L, grain.

flowered panicle; but *A. palaestinum* differs from *A. nebrodense* in numerous characters regarding mainly the spikelets. In fact *A. palaestinum* has spikelets up to 14 mm long, lower glume 6 mm long, upper glume 3-veined, 12-13 mm long, lower floret with lemma 12 mm long with awn 25-35 mm long and callus covered by hairs up to 2 mm long, upper floret with pedicel 1.5-2 mm long and lemma covered by dense hairs up to 4 mm long, grain 4,5-5 mm long. There are differences also from ecological point of view, since *A. palaestinum* grows in the dry habitats represented by phrygana, batha and grassland.

On the whole *A. nebrodense* can be considered an endemic quite isolated taxonomically linked, as well as *A. elatius* subsp. *sardoum*, *A. elatius* subsp. *baeticum*, *A. palaestinum*, *A. kotschyi*, to natural habitats and therefore they belongs to an ancestral stock going back to the old Tertiary flora, from which *A. elatius* s.str. and *A. bulbosum*, both localized in nitrophilous or synantropic places, are probably arisen. On the basis of these considerations, it is our opinion that the taxa referable to the cycle of *A. elatius* should be treated as distinct species, so the following new combinations are proposed:

1) *Arrhenatherum sardoum* (E. Schmid) Brullo, Minissale & Spampinato **comb. et status nov.**

Bas.: *Arrhenatherum elatius* var. *sardoum* E. Schmid, Viert. Naturf. Ges. Zurich 70: 239 (1933)

2) *Arrhenatherum baeticum* (Romero Zarco) Brullo, Minissale & Spampinato **comb. et status nov.**

Bas.: *Arrhenatherum elatius* subsp. *baeticum* Romero Zarco, *Acta Bot. Malacit.* 10: 134 (1985)

As concerns the *Arrhenatherum* species occurring in the Italian territory, the following key is given:

1. Culm with globose tubercles at basal internodes 2
Culm without globose tubercles at basal internodes 3
2. Basal internodes with 2-6 tubercles; panicle 15-30 cm long, with 60-200 spikelets *A. bulbosum*
Basal internodes with 1(2) tubercles; panicle 5-12 cm long, with 10-45(60) spikelets *A. nebrodense*
3. Culm 60-130 cm long, panicle 13-25 cm long, with (40) 60-270 spikelets *A. elatius*
Culm 20-60 cm long, panicle 5-15 cm long, with 10-60 spikelets *A. sardoum*

Acknowledgement

Financial support by Italian M.U.R.S.T. (40%) is gratefully acknowledged.

References

- DOGAN (1985). *Arrhenatherum* P. Beauv. In P. H. DAVIS (ed.), *Flora of Turkey and the East Aegean Islands* 9: 313-315. Edinburgh.
- FIORI, A. (1923). *Nuova flora analitica d'Italia*. 1. Firenze.
- FEINBRUN-DOTHAN (1986). *Flora Palaestina* 4. Jerusalem.
- GUSSONE, G. (1843). *Florae siculae Synopsis*. 1. Neapoli.
- HOLUB, J. (1980). *Arrhenatherum* Beauv. In T. G. TUTIN & al. (eds.), *Flora Europaea* 5: 216-217. Cambridge.
- KERGUÉLEN, M. (1975). Les Gramineae (Poaceae) de la flore française essai de mise au point taxonomique et nomenclaturale. *Lejeunia*, n.s. 75: 1-343.
- LOJACONO POJERO, M. (1909). *Flora Sicula, o descrizione delle piante vascolari spontanee o indigenate in Sicilia* 3. Palermo.
- ROMERO-ZARCO, C. (1985). Revision del genero *Arrhenatherum* Beauv. (Gramineae) en la peninsula iberica. *Acta Bot. Malacitana* 10: 123-154.
- (1987). *Arrhenatherum* Beauv. In B. VALDES & al. (eds.), *Flora Vascular de Andalucia Occidental* 3: 309-311. Barcelona.
- RECHINGER, K. H. (1943). *Flora Aegaea*. Wien.
- PARLATORE, F. (1845). *Flora Palermitana*. Firenze.
- PIGNATTI, S. (1982). *Flora d'Italia* 3. Bologna.
- PRESL, C. B. (1820). *Cyperaceae et Gramineae siculae*. Pragae.

Address of the authors:

Prof. S. Brullo & Dr. P. Minissale, Dipartimento di Botanica, via A. Longo, 19, 95125 Catania, Italy. Dr. G. Spampinato, Dipartimento di Agrochimica e Agrobiologia, p.za S. Francesco, 4, 89061 Gallina, Reggio Calabria, Italy.