

FOUR NEW PLANT SPECIES FROM ILAM PROVINCE, IRAN

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Four new species including: *Echinops quercetorum* (Compositae: Echinopeae), *Erysimum elymaiticum* (Brassicaceae), *Gypsophila elymaitica* (Caryophyllaceae), and *Trichodesma elymaiticum* (Boraginaceae) are described. Taxonomic characters for all species with illustrations are given.

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Key words. new species, *Echinops*, *Erysimum*, *Gypsophila*, *Trichodesma*, new species, Ilam, Iran.

در طی مطالعات انجام شده در فاصله سالهای ۱۳۸۳-۱۳۸۶ در استان ایلام، واقع در جنوب غرب ایران، پوشش گیاهی نقاط بسیاری مورد بازدید و جمع‌آوری و شناسایی قرار گرفت. حدود ۱۰۰۰ گونه گیاهی از این استان شناسایی گردیده است که در میان آنها ۴ گونه جدید برای جهان گیاهشناسی تشخیص داده شده است که عبارتند از:

Echinops quercetorum (Compositae: Echinopeae), *Erysimum elymaiticum* (Brassicaceae), *Gypsophila elymaitica* (Caryophyllaceae), and *Trichodesma elymaiticum* (Boraginaceae)

Introduction

During my study in 2003-2006 on the flora of Ilam province, about 134 localities were visited from early spring to late in the autumn. In this attempt about 1000 species were collected and determined. In these collections the author found some new species from Iran, which is described here. Notes are given on the taxonomic characters and distribution of the species and a line drawing illustration is provided for them. Beside of these new species two more species of *Astragalus* (Papilionaceae) were published in an article by Maassoumi & Mozaffarian (2006). Also, vegetation and flora of Ilam province were generally described by the author in another paper (Mozaffarian 2006).

The type specimens of all new species are preserved in (TARI).

Echinops quercetorum Mozaff., sp. nov. –(Fig. 1).

Sect. *Rytrodes* Bunge

Planta perennis, Multicaulis. Caulis usque ad 30-60 cm altus, ad basin crispato-villosus et ± papillosus, supra medium patule vel stricte ramosus, striato-costatus, plus minusve dense foliatus. Folia omnia coriacea vel coriaceo-herbacea, supra papillosa et dense vel laxe

araneoso-tomentosa, canescentia vel atroviridia, subtus dense albo-araneoso-tomentosa, manifeste nervosa, nervis in spinis excurrentibus; folia basalia cito decidua, caulina pinnatisecta, ambitu oblonga, sessilia, manifeste rotundato-auriculata, 15-17 cm longa et ad 7 cm lata, segmentis majoribus 5-6 jugis, oblongo-ovatis, longe dentato-spinosis, stricte horizontaliter patentibus, segmentis basalibus foliaceis, stipuliformibus, longe dentato-spinosis, rachidi anguste alato, segmentis superioribus cum rhachidibus conjunctis, ± trilobatis, longe spinosis; folia caulina superiora similia; folia ramealia apicem versus reducta, lanceolato-triangularia, spinoso-lobata vel dentata. Glomerulus plus minusve 3-5 cm diametro, e capitulis inferioribus et superioribus lanatis et non cornigeris compositus; receptaculum globosum, 4-6 mm diametro; involucre commune 6-7 mm longum, e phyllis membranaceis antice triangularibus, fimbriatis compositum. Capitula inferiora usque ad 20 mm longa, lanata; pencillum usque ad 10-12 mm longum; phylla 22-23, exteriora e basi linearia, apicem versus elliptico-triangularia, integra, breviter acuminata, plus minusve nigra, albo marginata; phylla intermedia longe lanceolato-elliptica, longe acuminata, pallide brunnea, apicem versus alba, lanata, integra; phylla quina intima in tubum atrobrunneum membranaceum coalita, plus minusve

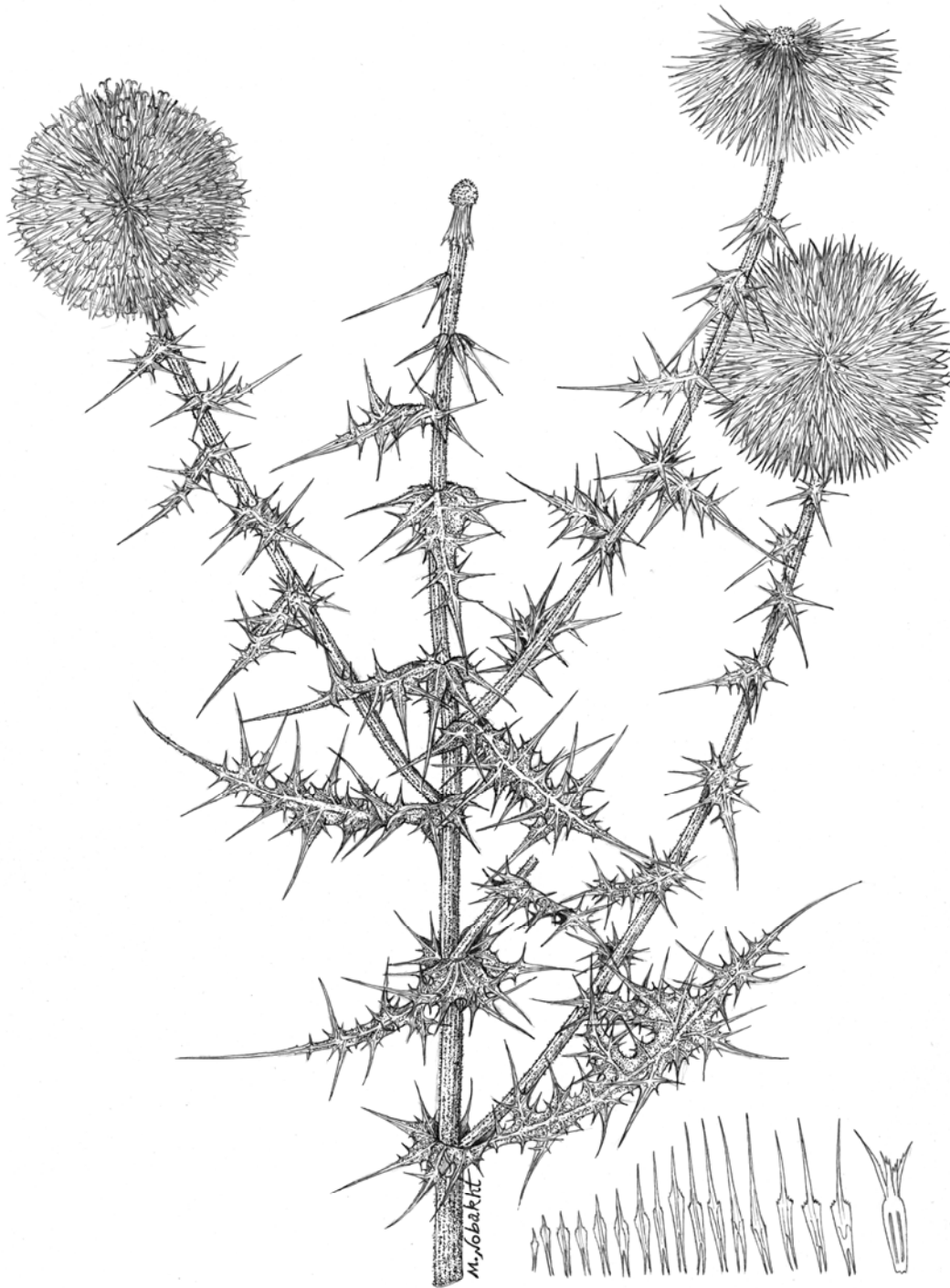


Fig. 1. *Echinops quercetorum* (x0.78); bracts (x1.1).

glabra; capitula superiora usque ad 24 mm longa, lanata; phyllis capitulum inferioria similia sed longiora, longe acuminata, dilute flava; corolla caerulea.

Type. Iran: Ilam, ca. 32 km from Ilam to Eivan, after the tunnel, 16.8.1999, 1570 m, V. Mozaffarian 79816, 79536 (hol. TARI).

Affinities: *Echinops quercetorum* because of having lanate upper and lower capitulum of heads is close to *Echinops bachtiaricus* Rech. f. (Rechinger 1979, Mozaffarian 2002, Mozaffarian 2006 and Mozaffarian 2008) but it differs by having many dissected leaves (non pinnatisect), with large 4-6 segments, and wholly lanate lower and upper capitulum of heads (non ± lanate and wholly leafy stems up to the capitulum) and much branched in the upper part of stem, (not naked below the heads).

Perennial, many-stemmed; stem up to 30-60 cm high, at the basal part crispate villous, and ± papillose, above the middle with strict and spreading branches, striate-costate, ± densely leafy, all leaves leathery or leathery-herbaceous, in upper side papillose and densely or loosely arachnoid-tomentose, grayish or deep green, in the lower side densely white arachnoid-tomentose, prominently nerved; nerves decurrent to spine; basal leaves soon deciduous; cauline leaves pinnatisect, oblong in outline, sessile, prominently rounded-auriculate, 15-17 cm long, dentate, spinose, horizontally spreading, with basal leafy segments; rachis narrowly winged; upper segments connected to rachis, ± 3-lobed, long spinose; upper cauline leaves similar; leaves of branches towards the tip reduced, lanceolate-triangular, spiny-lobed or dentate. Heads ± 3-5 cm in diameter, consisting of lower and upper lanate and non cornigerous capitulum; receptacle globose, 4-6 mm in diameter; common involucre 6-7 mm long, with membranaceous bracts; bracts at the tip triangular and fimbriate. Lower capitulum of a head up to 20 mm long, lanate; brush up to 10-12 mm long; phyllaries 22-23, outer linear at base, towards the tip elliptic-triangular, entire, shortly acuminate, ± black, white-margined; intermediate bracts long lanceolate, elliptic, long acuminate, pale brown, towards the tip white woolly, entire; innermost 5, connate to dark brown membranaceous tube, ± glabrous; upper capitulum up to 24 mm long, woolly; bracts similar to lower capitulum, but longer, long acuminate, pale yellow. Corolla sky-blue.

***Erysimum elymaiticum* Mozaff., sp. nov. -(Fig. 2).**

Perenne, caespitosum. Indumentum totus plantae appressissimum argenteum, e pilis bifidis compositum. Caules erecti, 25-55 cm alti, simplices vel supra

medium pauciramosi, inferne laxe foliati. Folia omnia filiformia vel linearo-filiformia, acuta, integerrima. Racemi floriferi conferti, fructiferi valde elongati, laxi; pedicelli 1-2 mm longi, ± crassi. Calyx 4-5 mm longus. Sepala exteriora saccata, apicem cucullata, ovato-lanceolata; sepala interiora non saccata, apicem gibboso-cucullata. Petala alba, ad 9 mm longa, obovato-unguiculata, prominente nervosa, unguibus raro pallide violaceis. Siliquae 15-19 mm longae, axi appressae, raro actue-angulo patentiae, apicem versus in stylum longissime attenuatae, valvis indistincte costato-carinatis. Stylus 4-6 mm longus. Stigma capitatum.

Type. Ilam: Salehabad, Kulek protected area, 785 m, N. 33,32; E. 46,08; 29.IV.2005, V. Mozaffarian 88394 (hol. TARI).

Affinities. New specimen with having the white flowers is an isolated species between Iranian *Erysimum* species mentioned in Flora Iranica (Rechinger 1968), by having appressed medifixed hairs, the closest species to it is *Erysimum strophades* Boiss. (Boissier 1867, Townsend 1980) which differs from it by having erect fruit (not contorted or strongly plicate).

Perennial, caespitose. All part of the plant is covered by well appressed silvery bifid hairs. Stem erect, 25-55 cm high, simple or above the median parts with few branches, in lower part loosely leafy. All leaves needle-shaped or linear-needle-shaped, acute, entire. Flower bearing raceme dense; fruit bearing one strongly long, loose; pedicels 1-2 mm long, ± thick. Calyx 4-5 mm long. Outer sepals saccate, at the tip cuculate (hood shaped), ovate-lanceolate; inner sepals not saccate, with gibboso-cuculate tip. Petals white, up to 9 mm long, obovate, clawed, prominently veined, rarely with pale violate claws. Siliqua up to 15-19 mm long, appressed to the axis, rarely making acute-angle with the axis, towards the tip attenuate to a long style; valves obscurely costate-carinate. Style 4-6 mm long. Stigma capitate.

***Gypsophila elymaitica* Mozaff., sp. nov. -(Fig. 3).**

Planta perennis, rupestris; caudex induratus, crasse lignosus. Caules floriferi pauci, tenues, 30-45 cm longi, prostrati, in part inferioris glanduloso-pilosi, superne glabri, dichotomo-romosi. Folia basalia linearia, glabra ± carnososa, 10-20 mm longa, 1-2 mm lata; caulina inferiora linearia, a basi connata, ± 7-10 mm longa; folia superiora ± bracteiformia, filiformia, 4-5 mm longa, a basi hyaline marginata, glabra. Inflorescentia dichasialis, laxa vel in terminalia ± aggregata, 1-5 flora; pedicelli nulli vel usque ad 5 mm longi, glanduloso-pubescentes. Calyx 6-8 mm longus, turbinato-

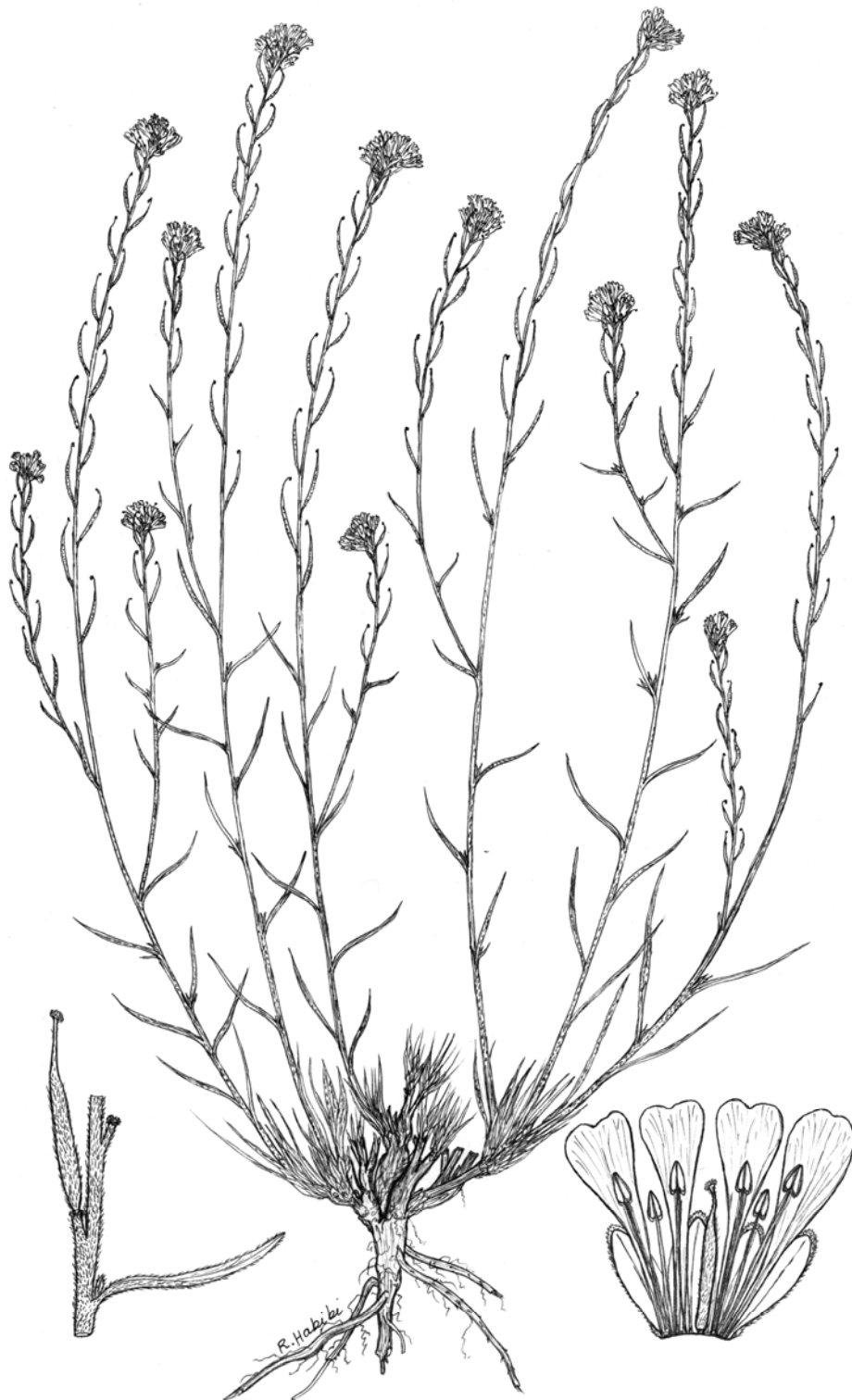


Fig. 2. *Erysimum elymaiticum* (x0.6); flower (x3.6); fruit (x1.8).

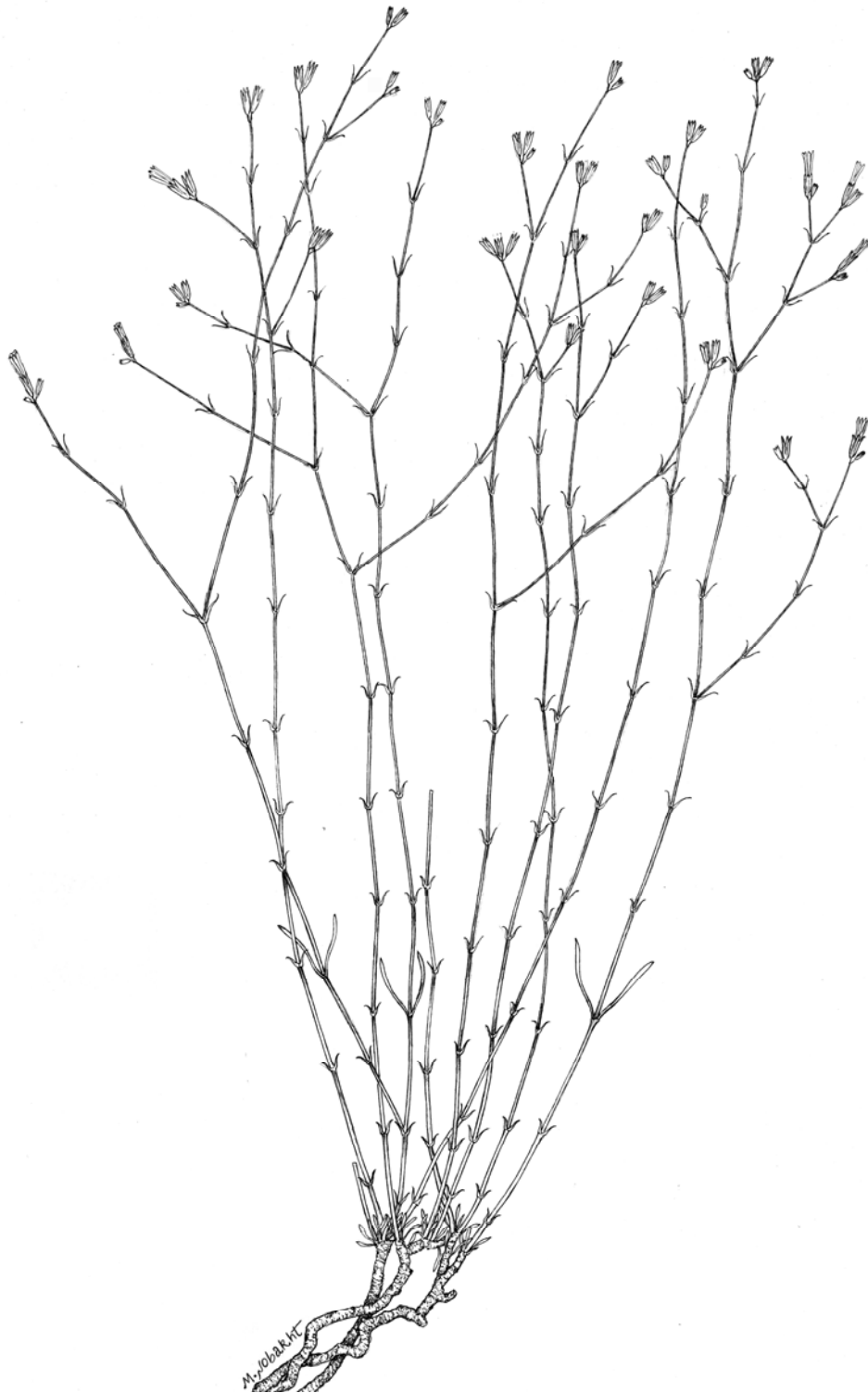


Fig. 3. *Gypsophila elymaitica* (x0.5).

tubulosus, glanduloso-pilosus, dentibus ad 1/3 tubi longitudinalis attingentibus, triangularibus obtusis; petala oblanceolata, basi attenuata, alba, apice rotundata, calyce sesquialongiora. Ovula 20-24. Capsula calycem tubum aequans; semina ca. 0/05 mm diametro, radicellis prominentibus.

Type. Iran: Ilam to Darreshahr, Kulm, N. slope of Rocky deep gorge of Kabirkuh, S. of Kulm, 23 VIII 2004, V. Mozaffarian 88385 (hol. TARI).

Other specimens seen. Ilam to Darreshahr, Badre, Tange Kafari, 700 m, V. Mozaffarian 88396 (TARI); Khuzistan: Dehdez, kuh-e Gharon, from Absefid valley, 1000-1500 m, V. Mozaffarian 74483 (TARI).

Affinities. This species because of having woody caudex, long thin stem and loose to \pm capitate inflorescence is not similar to any species mentioned in Flora Iranica (Rechinger 1968). By having turbinate-tubular calyx belongs to *Gypsophila* subgen. *Macrorrhiza* (Boiss.) Pax & Hoffm (Barkoudah 1962), but this subgenus have no representative in Iran.

Perennial, growing in slit of rocks, with thickened woody rootstock. Flowering stems few, thin, 30-45 cm long, spreading over the rocky ground, glandulose-pilose at base, in upper part glabrous, bifurcately branched. Basal leaves linear, \pm fleshy, 10-20 mm long, 1-2 mm wide; lower cauline leaves linear, connate at base, \pm 7-10 mm long, upper cauline leaves \pm bract-shaped, filiform, 4-5 mm long, in the lower part manifestly with scarios margins, glabrous. Inflorescence dichotomous cyme, loose or at the terminal part of the main stems condensed, with 1-3 nearly capitate flowers. Pedicels absent or to 5 mm long, glandulose-pilose; calyx 6-8 mm long, turbinate-tubular, glandulose-pilose, with teeth to 1/3 shorter than the calyx tube, triangular, obtuse; petals oblanceolate, towards the base attenuate, white, at the tip rounded, 1.5 times longer than the calyx. Ovules 20-24. Capsule equaling to the calyx tube; seeds ca. 0/05 mm in diameter; radicle conspicuous.

***Trichodesma elymaiticum* Mozaff., sp. nov. - (Fig. 4).**

Perenne, caespitosum, multicaule; indumento foliorum setis brevissime basi calcareo-tuberculatis. Caulis erecti vel ascendentes, usque ad 25 cm longi, simplices vel trichotomi ramosi, laxe foliati, supra longe nudi. Folia omnia opposita, sessilia vel infima tantum petiolata, manifeste albo-tuberculata; folia caulina late ovata, 40-50 mm longa, 25-30 mm lata, acuta, basi rotundata vel leviter attenuata, basalia breviter petiolata, opposita, superiora decrescentia. Inflorescentiae subcorymbosae, 3-5 florum. Calyx

florifer 14-16 mm longus, laciniis usque ad basin fere liberis, cordato-rotundatis, ovatis, longe acuminatis, margine dense strigosis, fructifer valde auctis, laciniis late ovato-triangularibus 25 mm longis, 14 mm latis. Corolla alba, campanulata, tubo 14-16 mm longo, limbo ovato-triangulari, lobis abrupte in apicem anguste linearem attenuatis. Antherae albo-villosae, aristis longe attenuatis usque ad 5 mm longis, apice subcontortae. Nuculae 14 mm longae, 7 mm latae, ovatae, glabrae, areae medianae carinatae, manifeste reticulatae, margine anguste alatae, laxe dentatae.

Typus. Ilam: Salehabad, S. E. of Salehabad, Kureksorkh, 540 m, N. 33,28; E. 46, 10; 30.V.2005, V. Mozaffarian 88387 (hol. TARI). *-Paratypus.* Same locality, 640 m, N. 33,25; E. 46,12; 26.10,2004, V. Mozaffarian 88386 (TARI).

Affinities. *Trichodesma elymaiticum* is characterized by having white flowers, opposite leaves, to 14-16 mm long sepals and ovate glabrous nutlets with loose dentate wings. The species is \pm close to *Trichodesma boissieri* Post, but differs from it by the colour of petals, shape of leaves and rugose margined nutlets (Dothan 1978), and by the structure of flowers and indumentum differs from species mentioned by Riedl (1967) from Iran.

Perennial, caespitose, many-stemmed. Indumentum of leaves consisting of very short bristles, calcareo-tuberculate at base. Stems erect or ascending, to 25 cm high, simple or trichotomous branched, loosely leafy, in upper part for a long distance naked. All leaves opposite, sessile or only lower ones petiolate, prominently white-tubercled; cauline leaves broadly ovate, 40-50 mm long, 25-30 mm wide, acute, rounded at base or slightly attenuate, basal ones shortly petiolate, upper ones reduced. Inflorescence almost corymbose, 3-5 flowered; flowering calyx 14-16 mm long; laciniis free to base, cordate-rounded at base, ovate, long acuminate, densely strigose at margins; fruit bearing calyx markedly enlarged, with wide ovate-triangular lacinia, 25 mm long, 14 mm wide. Corolla white, campanulate, with 14-16 mm long tube; limbs ovate-triangular, with abruptly attenuate linear apex. Anthers white, villose, with long attenuate to 5 mm long awns, at the tip nearly contorted. Nutlets 14 mm long and 7 mm wide, ovate, glabrous, carinate at the middle, prominently reticulate, with narrowly winged margins, loosely dentate.

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Fig. 4. *Trichodesma elymaiticum* (x0.75); flower details (x3).

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