

AL FAATEH UNIVERSITY
FACULTY OF SCIENCE
DEPARTMENT OF BOTANY

FLORA OF LIBYA

35

20th September 1977

Editors :

S.M.H. JAFRI & A. EL-GADI
Al Faateh University,
Faculty of Science,
Department of Botany, Tripoli.

LINACEAE

by M.A. SIDDIQI

Illustrations by
M.Y. SALEEM

LINACEAE

M.A.SIDDIQI

Herbs or subshrubs. Leaves simple, alternate or opposite, stipulate or exstipulate. Flowers in terminal or axillary cymes or racemes clusters, rarely solitary, regular, bisexual, hypogynous. Sepals 4-5, imbricate, free or connate below. Petals 4-5, contorted in bud, free or united at the base, clawed. Stamens 5-10, filaments free or united at the base into a ring, often alternating with the staminodes. Ovary superior, 2-5-locular; each locule usually subdivided by a false septum with 2 pendulous ovules in each. Styles 3-5, free or connate at base. Fruit a capsule. Seeds glossy, compressed.

A cosmopolitan family of 12 genera; represented by only 1 genus in Libya.

LINUM

Linn., Sp. Pl. 277.1753; Gen. Pl. ed. 5.135.1754.

Annual or perennial herbs. Leaves with or without stipular glands, sessile, alternate, rarely opposite or verticillate, linear-lanceolate or spatulate, entire, sometimes serrulate. Flowers in terminal or axillary cymes, rarely solitary, actinomorphic, 5-merous. Sepals entire, very often glandular ciliate at margin, sometimes unequal, imbricate persistent. Petals 5, caducous, contorted, usually clawed, often connate at base, obtuse, variously coloured. Stamens 5, connate at base, usually with dentate staminodes in between (staminodes sometimes absent). Nectaries 5, or less, adnate to staminal tube on outside, opposite the petals. Carpels 5, ovary 10-locular due to secondary septa; styles 5, often free or connate to middle; stigma linear or capitate. Fruit a globose or ovoid septicidal capsule. Seeds smooth, shiny and flattened.

A genus of about 290 temperate and subtropical species, abundant in the Mediterranean region, S.W. & N.America; represented by 6 species in Libya.

1. + Leaves with a pair of glands at the base. Stem

LINACEAE

- | | |
|--|---|
| <p style="margin: 0;">with rows of glands which look like narrow wings (flowers yellow)</p> <p style="margin: 0;">— Leaves without glands at the base. Stem terete or striate</p> | <p style="margin: 0;">1. <i>L.nodiflorum</i></p> <p style="margin: 0;">2</p> |
| <p style="margin: 0;">2. + Annual. Petals yellow. Capsules less than 3 mm long</p> <p style="margin: 0;">— Annual, biennial or perennial. Petals blue (rarely red or white). Capsules more than 3 mm long)</p> | <p style="margin: 0;">3</p> <p style="margin: 0;">4</p> |
| <p style="margin: 0;">3. + Plants less than 30 cm tall. Leaf margin smooth, entire. Petals 4-6 mm long. Capsule up to 2 mm long</p> <p style="margin: 0;">— Plants usually more than 30 cm tall. Leaves margin rough, finely serrulate (sometimes revolute). Petals 6-12 mm long. Capsules 2-2.5 mm long</p> | <p style="margin: 0;">2. <i>L.trigynum</i></p> <p style="margin: 0;">3. <i>L. strictum</i> var. <i>spicatum</i></p> |
| <p style="margin: 0;">4. + Leaves margin scabrid. Sepals long acuminate. Petals red or pink</p> <p style="margin: 0;">— Leaves margin smooth. Sepals short acuminate. Petals blue</p> | <p style="margin: 0;">4. <i>L.decumbens</i></p> <p style="margin: 0;">5</p> |
| <p style="margin: 0;">5. + Plants usually biennial or perennial. Stem many. Capsule 5-6 mm long</p> <p style="margin: 0;">— Plants annual. Stem usually solitary. Capsule 7-9 mm long</p> | <p style="margin: 0;">5. <i>L.bienne</i></p> <p style="margin: 0;">6. <i>L. usitatissimum</i></p> |
1. ***Linum nodiflorum* L., Sp. Pl. 280.1753; Durand & Barratte, Fl. Lib. Prodr. 52.1910; Pamp., Prodr. Fl. Cir. 298.1931; Keith, Prelim. Check List Lib. Fl. 618.1965 (Fig. 1).**

L. luteolum Bieb., Fl. Taur.-Cauc. 1:256.1808; *L. nodiflorum* var. *perpapillosum* Gomb. in Not. Syst. Paris 14:110.1951.

Annual glabrous herb, 5-45 cm tall. Stems rigid, solitary or few with linear

LINACEAE



Fig.1 ***Linum nodiflorum***: A, habit x 0.5; B, flower x 3; C, fruit with persistent calyx x 4; D, seed x 8; E, nodal portion of stem showing linear rows of glands as well as small obovoid glands at the base of leaves x 8.

LINACEAE

rows of glands. Leaves sessile, spatulate, upper linear or oblong, 10-50 x 2-5 mm, 1(-3)-nerved, with small brown glands at base and with rough, finely serrulate margin. Branches dichotomously cymose and wide spreading. Flowers subsessile, axillary and terminal. Sepals 10-13 mm, 2-3 times as long as the capsule, linear-subulate, acuminate, scabrid margined, glandular at base. Petals yellow, 10-20 mm, oblong, cuneate, long clawed. Homostylous. Capsule 5-6 mm, indehiscent, ovoid, acute. Seed c. 3 mm long, oblong, with a rounded base and acute apex.

Type: Described from Italy; (Hb. Cliff. Hb. Linn. 396/36).

A-7 Wadi Qala' above Ras El-Hilal. 350 m. Open macchie. Annual. Flowers flava, 27, March 1970 *P.H.Davis* 50182 (ULT); Wadi El Mahbol, herb, erect, 15 cm, yellow flowers, 1.3.1973, *A.S.Sharif* 85 (ULT).

Distribution: S. Europe, Cyrenaica, Crimea, Cyperus, W.Syria, Caucasia, Mediterranean region, Iraq, Iran & Pakistan.

Fl. March-June

2. ***Linum trigynum* L.**, Sp. Pl. 279.1753. (Fig. 2).

L. gallicum L., Sp. Pl. ed. 2:401.1762; Durand & Barratte, Fl. Lib. Prodr. 51.1910; Pamp. Prodr. Fl. Cir. 298.1931; Keith, l.c. 618.

Erect or ascending glabrous annual, 7-30 cm tall. Leaves alternate, 10-15 (20) x 1-1.5(-3) mm, linear-lanceolate, margins smooth. Flowers arranged in lax, delicate cymes, subsessile. Sepals 3-4 mm, subacuminate, glandular-ciliate at margin and setaceous at apex, 2-3.5 mm long. Petals 3.5-6 mm, yellow. Stigma linear. Capsule c. 2 mm, globose. Homostylous. Seed 2 mm long, oblong, flattened, brown.

Type: Described from Montpellier, Frana: (Hb. Linn. 396/19, as gillium).

Reported by Durand & Barratte and others from Cyrenaica (Ghenab, Genna, Derna, Ras el Hilal in shade of junipers, near Kenissie).

Distribution: S. Europe, N. Africa (Mediterranean region), Cyperus, W. Syria and N. Iran.

LINACEAE

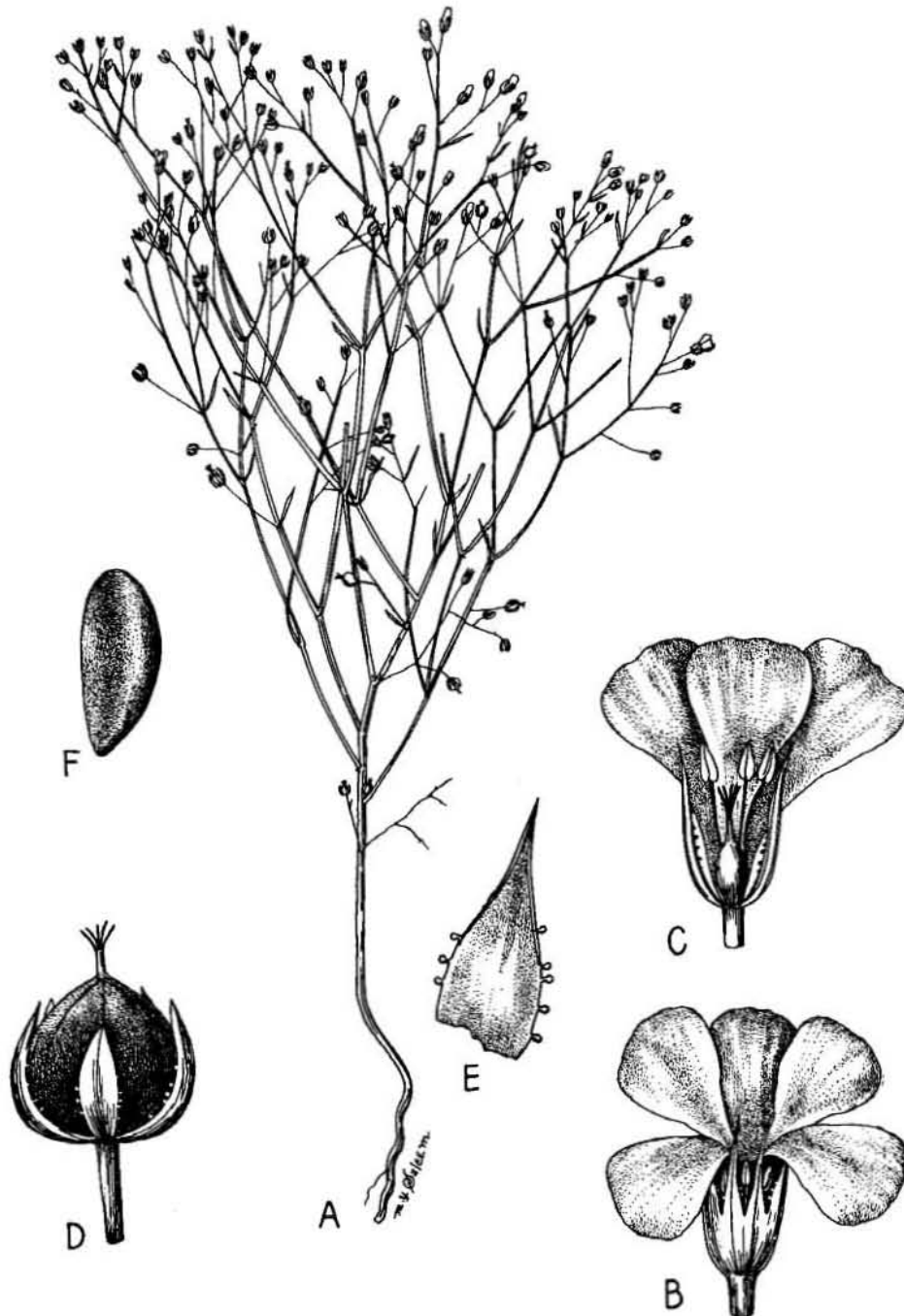


Fig.2

Linum trigynum: A, habit x 0.5; B, flower x 6; C, v.s. of flower x 6; D, fruit with persistent calyx x 20; E, a sepal x 7.5; F, seed x 6.

LINACEAE

3. *Linum strictum* L., Sp. Pl. 279.1753.

Erect annual herb; stems rigid 10-50 cm long, minutely hairy below. Leaves alternate, lanceolate-linear, 1-3 (-5) mm broad; minutely serrulate, scabrid and inrolled. Flowers crowded on axillary branches, sessile or subsessile, enclosed between the adjacent leaves. Sepals 4-6 (-7) mm, broadly-lanceolate, minutely serrulate and ciliate. Petals 6-10 mm, connate below, yellow, homostylous, stigmas capitate. Capsule 2-2.5 mm, subglobose; beak c. 0.3 mm. Homostylous. Seeds c. 1 mm long, ovate-elliptic, flattened, glossy, pale brown.

Type variety is confined to S. Europe and is not reported from Libya

var. *spicatum* Pers. Syn. Pl. 1.336.1805; Durand & Barratte, l.c. 52; Pamp., l.c. 298; Keith, l.c. 618 (Fig. 3).

Differs from the type variety by the flowers crowded on very short (1-5 mm) branches, i.e. (in dense cymes) forming a spike-like panicle.

Type: Described from Lusitania (Portugal).

A-3 Tripoli, Al-Faateh University Campus, annual herb, flowers yellow, 1.3.1977, *M.A.Siddiqi* 187 (ULT); A-7 Slonta to Marwa from Derna to El Merj (Barce). 500 m. Grassy depression in *Artemisia herba alba* steppe, 1 April 1970, *P.H.Davis* 50570 (E); B-2 Wadi Kabao (near picnic spot). Steep valley slope. Sandy soil c. 30-40 cm 5.5.1972, *S.I.Ali* 372 (ULT).

Distribution: S. Europe, N. & E. Africa, S.W.Asia eastwards to Pakistan.

Fl. March-July

4. *Linum decumbens* Desf., Fl. Atl. 1:278.1798; Durand & Barratte, l.c. 52; Pamp. l.c. 298; Ockendon & Walters in Tutin et al Fl. Europe. 2:209.1968; Keith, l.c. (Fig. 4).

A decumbent or ascending glabrous annual up to 45 cm tall. Leaves 1-3.5 (-5)

LINACEAE

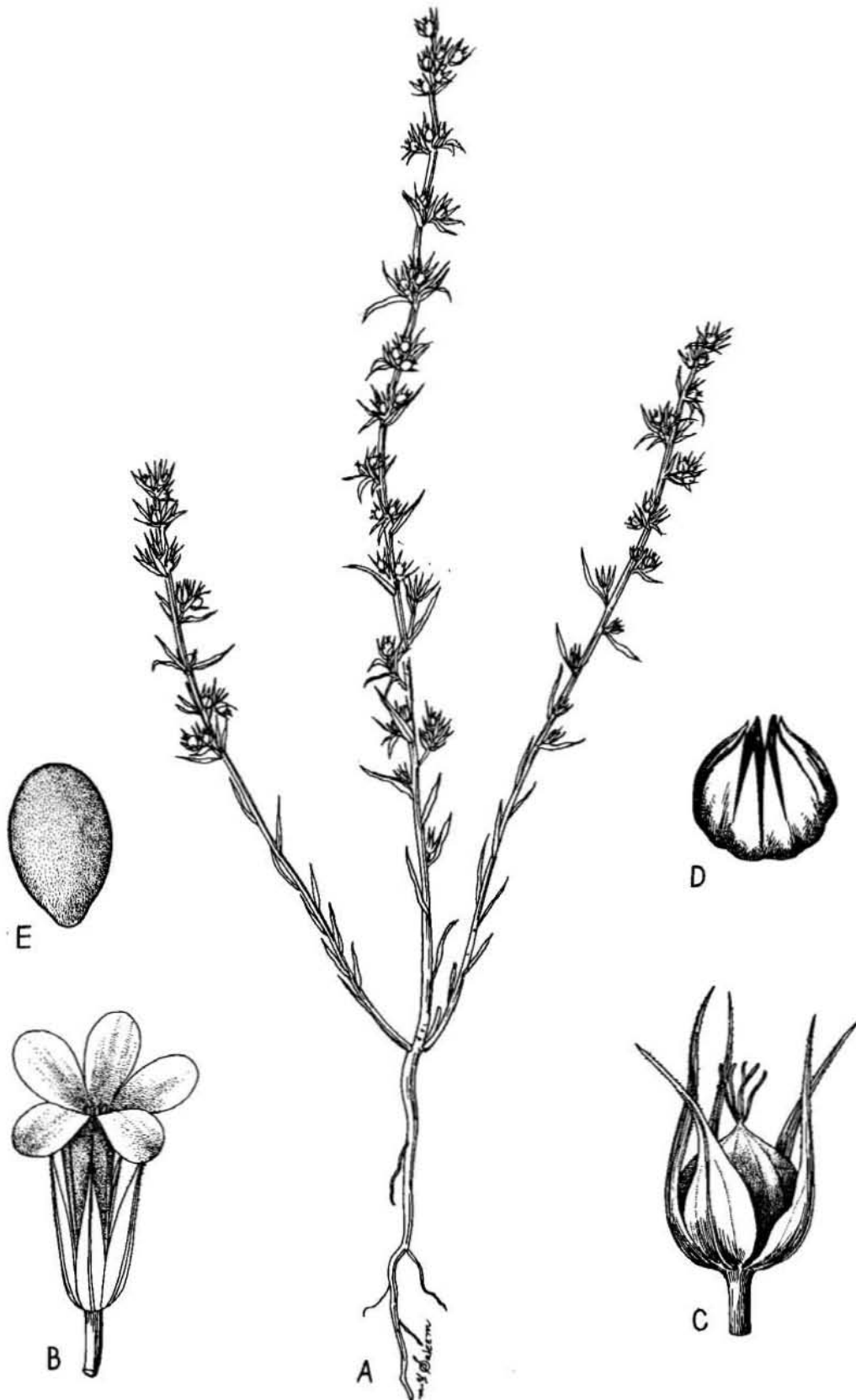


Fig.3 **Linum strictum** var. **spicatum**: A, habit x 0.5; B, flower x 7; C, fruit with persistent calyx x 8; D, dehiscent fruit x 8; E, seed x 15.

LINACEAE

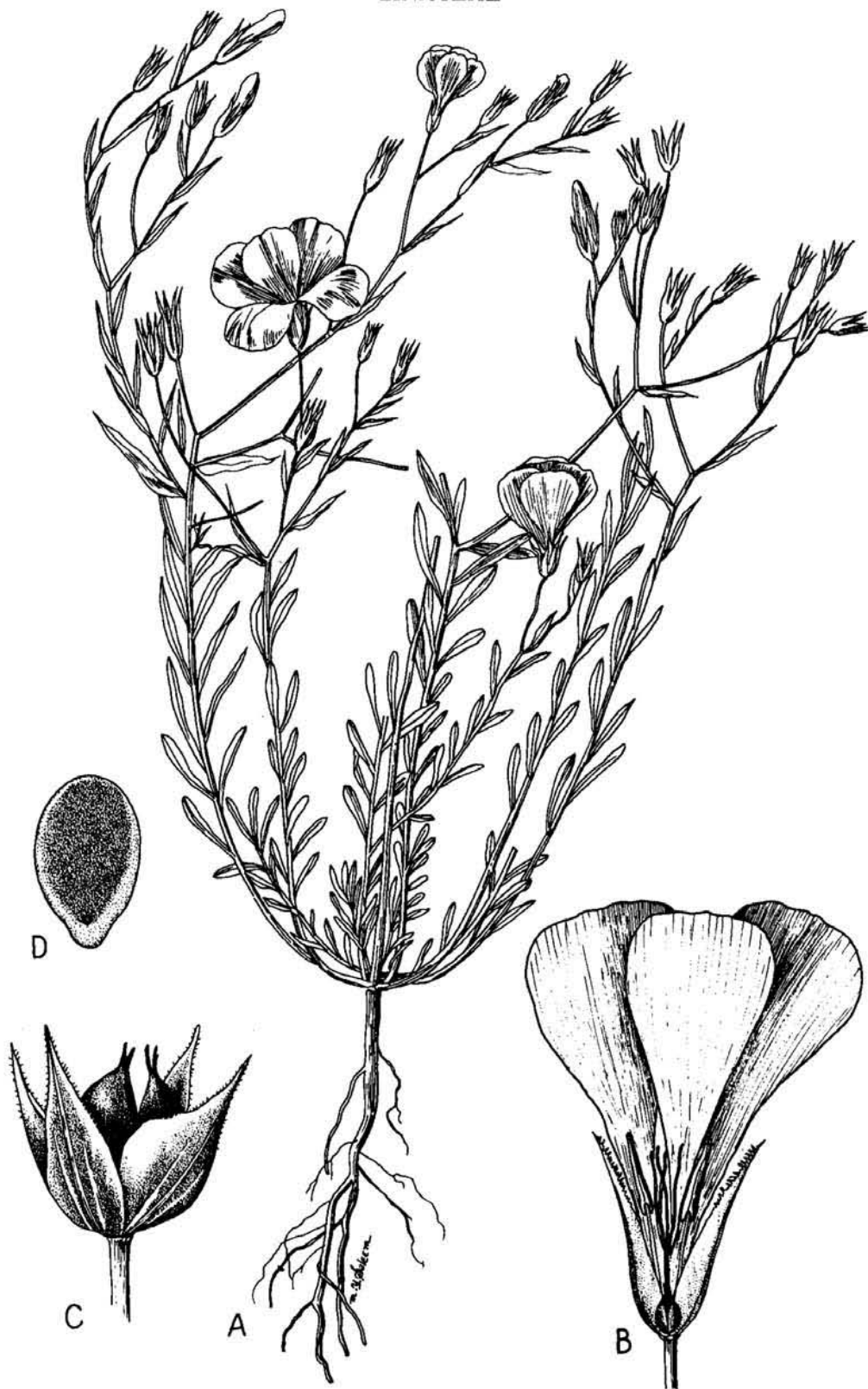


Fig.4 **Linum decumbens:** A, habit x 0.5; B, flower x 2; C, fruit with persistent calyx x 3; D, seed x12.

LINACEAE

mm wide, linear or linear-lanceolate, acute, 1-3 (-5)- nerved, scabrid margined. Sepals 6-9 mm, ovate, long acuminate, margins scarious, wide below and narrow, ciliate above. Petals 2-2.5 times as long as sepals, red. Stigmas linear. Capsule 4.5-6 mm, subglobose, beak c. 0.5-1 mm, acuminate. Homostylous. Seeds 3 x 2 mm, ovoid, rounded at base, acute at apex, flattened and pale brown.

Type: Described from Tunis

A-3 Maryyads Farm, 6 km from Tarhuna (86 km from Tripoli), flowers deep red, cult. 30-60 cm; 14.4.1972 *S.I.Ali* 213 (ULT).

Also reported to be growing in Tripolitania (Tripoli); Cyrenaica (Benghazi & Ajedabia, Benghazi, Lethe, Fueihat, Guarshia, Daher el Halfa, Hauari Osman, between Suani Osman, Mat, Tanzelell, Sidi Khalifa, Driana, Hauari, Suani Tika, Barce, Gasr el Maharuga plain & west of El Merj, El Gatres, Zorda, Got es Sas, Barce Plain) by Durand & Barratte, l.c.; Pamp. & Keith, l.c.

Distribution: E. Europe, S. Italy, Egypt, Tunisia, Algeria, Morocco, Sicily.

A naturalized species widely occurring in Libya.

Fl. March-June *Vern.* Khadd el arous

5. ***Linum bienne*** Miller, Gard. Dict. ed. 8, no. 8.1768. (Fig. 5, A-C)

L. angustifolium Hud. Fl. Angl. ed. 2, 134.1798; Durand & Barratte, l.c. 52; Pamp., l.c. 299; Keith, l.c. 617.

Annual, biennial or sometimes perennating glabrous herb. Stems 15-60 cm tall, procumbent or ascending, branching from base. Leaves lanceolate or linear lanceolate 5-15 (-20) x 1-1.5 (-2) mm, acute, 1-3 nerved, thin. Sepals ovate, subacuminate, keeled, 5-6 mm long, 1-nerved, extending to tip, white-membranous, dentate-ciliate margined. Petals blue or pale violet, c. 1 cm; anthers short, 1-1.5 mm long, blue; stigmas clavate-filiform. Capsule 5-6 mm long, globose-ovoid, completely dehiscent. Seeds 2-3 mm long, oblong elliptic pale brown, very glossy, beakless. Homostylous.

Type: Described from cultivated material originating from Istria (BM)

LINACEAE

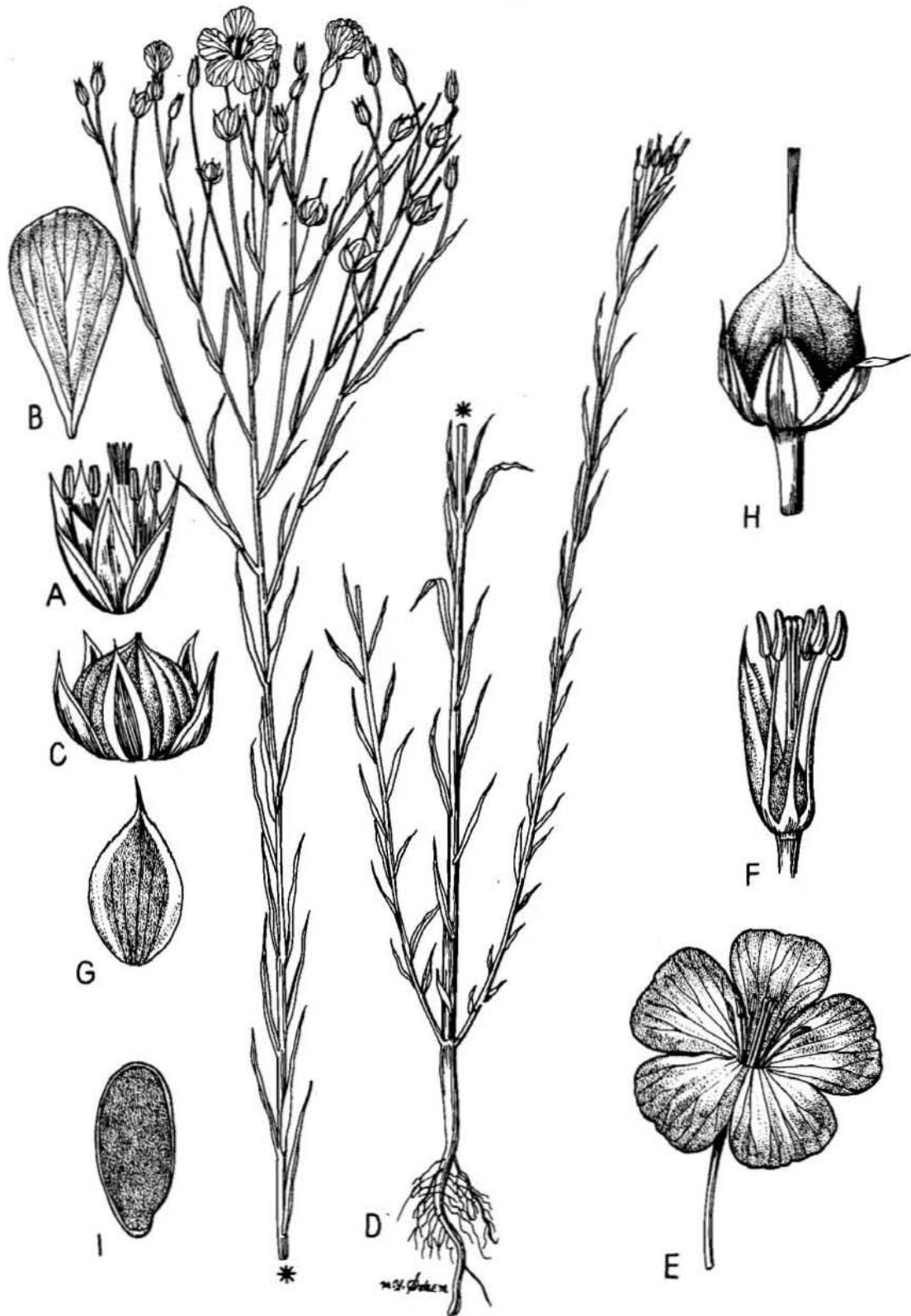


Fig.5

Linum bienne: A, flower with petal removed x 4; B, petal x 4; C, fruit with persistent calyx x 4. **Linum usitatissimum:** D, habit x 0.5; E, flower x 1; F, dissected flower showing one sepal, stamens and gynoecium x 3; G, a sepal x 3; H, fruit with persistent calyx x 3; I, seed x 5.

LINACEAE

A-7 5 km w. of Baida (El Merj-Beida). 300-350 m. limestone macchie (*Juniperus phoenicea* - *Pistacia lentiscus*). Annual. Flowers crimson. Petals cohering weakly above claw. 25 March, 1970, *P. H. Davis* 49981 (E); Al-Bakur, near Tobra, Gebel Akhdar, 10.3.1968; *L. Boulos* 2108 (ULT); El-Kharsa, coastal road Derna-Ras El-Hilal, Gebel Akhdar, 11.3.1968, *L. Boulos* 2137 (ULT). Also reported from Kussabat, Tarhuna, Ain Mara, Barce Plain, Shahat, Museilga, near Gubba, Megaret bu Faina, near Derna by Durand & Barratte, l.c.; Pampanini, l.c.; Keith and others.

Distribution: W. Europe, Mediterranean (from N. Africa), Caucasus, Syria, N. Iraq, Iran.

Probably the wild ancestor of *L. usitatissimum*. The plant is sometimes cultivated for its fibre.

Fl. March-June

6. **Linum usitatissimum* L., Sp. Pl. 277.1753; Durand & Barratte, l.c. 52; Pamp., l.c. 299; Keith, l.c. 618 (Fig. 5, D-I).

L. humile Miller, Dict. Gard. ed. 8 no. 2.1768; *L. usitatissimum* var. *humile* (Miller) Pers., Syn., 1.1805.

Annual or biennial, erect herb. Stems 1-3, 10-120 (-150) cm, upright and erect. Leaves linear or linear-lanceolate, 3-nerved, 10-30 x 1.5-4 mm, acute. Pedicels erect. Sepals 5-9 mm long, ovate, ovate-lanceolate or oblong-lanceolate, sub-acuminate, persistent, keeled, 3-nerved, wide scarious margined, scabrous towards apex, finely ciliate. Petals blue, 10-15 mm long, cuneately obovate, slightly crenate. Styles with cuneate-linear stigma, dark blue to violet. Capsule 6-10 mm long, flattened-globose or globose-ovoid, with mucronate apex, indehiscent or dehiscent. Seeds 5- 2.5 mm, ovoid or oblong-elliptic, flattened, brown to dark brown, smooth and glossy.

Type: Described from England, Hungary & Spain (Hb. Cliff).

A-3 Tripoli, Faculty of Pharmacy, Al-Faateh University, Tripoli, an annual cultivated herb, c. 52 cm tall, flowers pale blue, *M. A. Siddiqi* 225 MAS (ULT); Also reported from Barce (El Merj) and Augila by Keith, l.c. and others.

LINACEAE

Distribution: Known from cultivation only.

A popular species of many cultivars grown for its fibre (flax) and the linseed oil.

Fl. March-April *Vern.*: Kettan, Kittania

INDEX TO LINACEAE

- Linum** Linn. 1
- L. angustifolium* Hud. 9
- L. bienne** Mill. 9
- L. decumbens** Desf. 6
- L. gallicum* L. 4
- L. humile* Mill. 11
- L. luteolum* Bieb. 2
- L. nodiflorum** L. 2
- L. nodiflorum* var. *perpapillosum* Gomb. 2
- L. strictum** L. 6
- L. strictum** var. *spicatum* Pers. 6
- L. trigynum** L. 4
- L. usitatissimum** L. 11
- L. usitatissimum* var. *humile* (Mill.) Pers. 11