

**DESCRIPTION AND ILLUSTRATION OF SEEDS AND SEEDLINGS OF *Lotus angustissimus* L., *L.palustris* Willd. and *L.suavelons* Pers (FABACEAE - FABOIDEAE)**

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Introduction

The species studied belong to *L. angustissimus* group, Heyn (1970) explained the complications in delimiting the species and found that the most important characters were the shape of the keel in combination with the size of the legume.

The seed and seedling topography were observed at 40 x magnifications using a stereoscopic microscope. Seed size was recorded in millimeters for length and width. Length was measured along the long axis of the seed (from chalazal to radicular end) and width was measured at the widest point of the seed using a caliper. Seed weight was obtained with a precision scale.

Seeds were germinated in Petri-dishes and the seedlings were cultivated in pots filled with soil.

The illustration were drawn with the aid of a camera lucida fitted on a stereoscopic microscope.

The seed samples used in this work were kindly provided by C.C.Heyn, Israel, The Hebrew University of Jerusalem; Simon Linington, U.K., Kew, Royal Botanic Gardens; C.Gunn and G. White, USDA, Regional Plant Introduction Program, Geneva, NY. Thanks are due to them.

Some years ago, the species were cultivated, seeds and specimens collected; they were deposited in the Herbarium of Area de Botánica (LPAG), Departamento de Biología, Facultad de Ciencias Agrarias y Forestales de la Universidad Nacional de La Plata.

Seed morphology

1.- *L.angustissimus* L.

(Fig.1, a,b,c,d,A,B)

Seed minute, glossy to dull, smooth at low magnifications (40x or less); subcircular; 0,80-1,25 (0,99) x 0,75-1,15 (0,92) mm; monochrome pale yellow, yellowish-brown to ochre or dichrome with dense purple pointed. Radicular lobe discernible but not

separate; hilum circular, rounded by rim aril; hilar rim conspicuous and yellowish which usually presents different colour from the rest of the surface; raphe area discoloured, linear-deltoid and straight; lens inconspicuous protuberance. Seed transection circular. Embryo with the radicle longer than the middle of cotyledons length. Abundant endosperm on the outside of both cotyledons.

2.- L. palustris Willd.

(Fig. 1, e,f,g,h,E,F)

Seed semiglossy to dull, smooth, oblong to subcircular; 1,10-1,35 (1,23) x 1,00-1,30 (1,16) mm; monochrome green-yellow turning brownish to ochre, rarely diffuse purple pointed. Radicular lobe discernible but not separate; hilum circular rounded by rim aril; hilar rim conspicuous with different colour of the rest of surface, greenish or dark brown; raphe area discoloured, linear deltoid and slightly deflexed respect seed longitudinal axis; lens inconspicuous. Seed transection circular. Embryo with radicle longer than the middle of cotyledons length. Abundant endosperm on the outside of both cotyledons.

3.- L. suavelons Pers.

(Fig. 1, i,j,k,l,I,J)

Seed glossy, semiglossy to dull, smooth, subcircular; 0,90-1,05 (1,10) x 0,85-1,20 (0,98) mm; dichrome yellow, yellowish-brown, light brown to ochre with purple mottled. Radicular lobe discernible but not separate; hilum deltoid rounded by rim aril; hilar rim discoloured; raphe area broadly linear and straight; lens inconspicuous. Seed transection circular. Embryo with radicle longer than the middle of cotyledons length Endosperm abundant on the outside of both cotyledons.

Seedling morphology

The seedlings presented a pilose trifoliolate eophyll in L. angustissimus and L. suavelons but glabrous in L. palustris; the second, third and following leaves were pentafoliolate metaphylls.

Literature cited

Heyn,C.C. 1970. Studies in Lotus. III. The L. angustissimus group. Israel J Botany, Vol.19:271-292.

I. - Seed characters selected

| SPECIES              | SIZE |      | COLOUR |    | HILUM outline |   | HILAR RIM (halo) |   | RAPHE area |     |     |     |
|----------------------|------|------|--------|----|---------------|---|------------------|---|------------|-----|-----|-----|
|                      | l    | w mm | M      | Di | C             | D | g                | y | b          | lds | ldd | bls |
| <u>Lotus</u>         |      |      |        |    |               |   |                  |   |            |     |     |     |
| <u>angustissimus</u> | 0,99 | 0,92 | +      |    |               |   | +                | + |            | +   |     |     |
| <u>palustris</u>     | 1,23 | 1,16 | +      |    |               |   | +                | + |            | +   |     |     |
| <u>suavelong</u>     | 1,10 | 0,98 | +      |    |               |   | +                | + |            | +   |     |     |

Abbreviations: size: l = length; w = width  
 colour: M = monochrome; Di = dichrome; dens = dense; dif = diffuse  
 hilum outline: C = circular; D = deltoid  
 halo: g = greenish; y = yellowish; b = brown  
 raphe area: lds = linear deltoid straight; ldd = linear deltoid  
 deflexo; bls = broadly linear straight

II. - Seeds weight

| SPECIES              | number of seeds/granne |
|----------------------|------------------------|
| <u>Lotus</u>         |                        |
| <u>angustissimus</u> | 2360 - 2600            |
| <u>palustris</u>     | 1050 - 1176            |
| <u>suavelong</u>     | 1870 - 2590            |

III. - Seedlings characters selected

| SPECIES              | EOPHYLL  |           |
|----------------------|----------|-----------|
| <u>Lotus</u>         | glabrous |           |
| <u>angustissimus</u> |          | pubescent |
| <u>palustris</u>     |          | dense     |
| <u>suavelong</u>     |          | diffuse   |

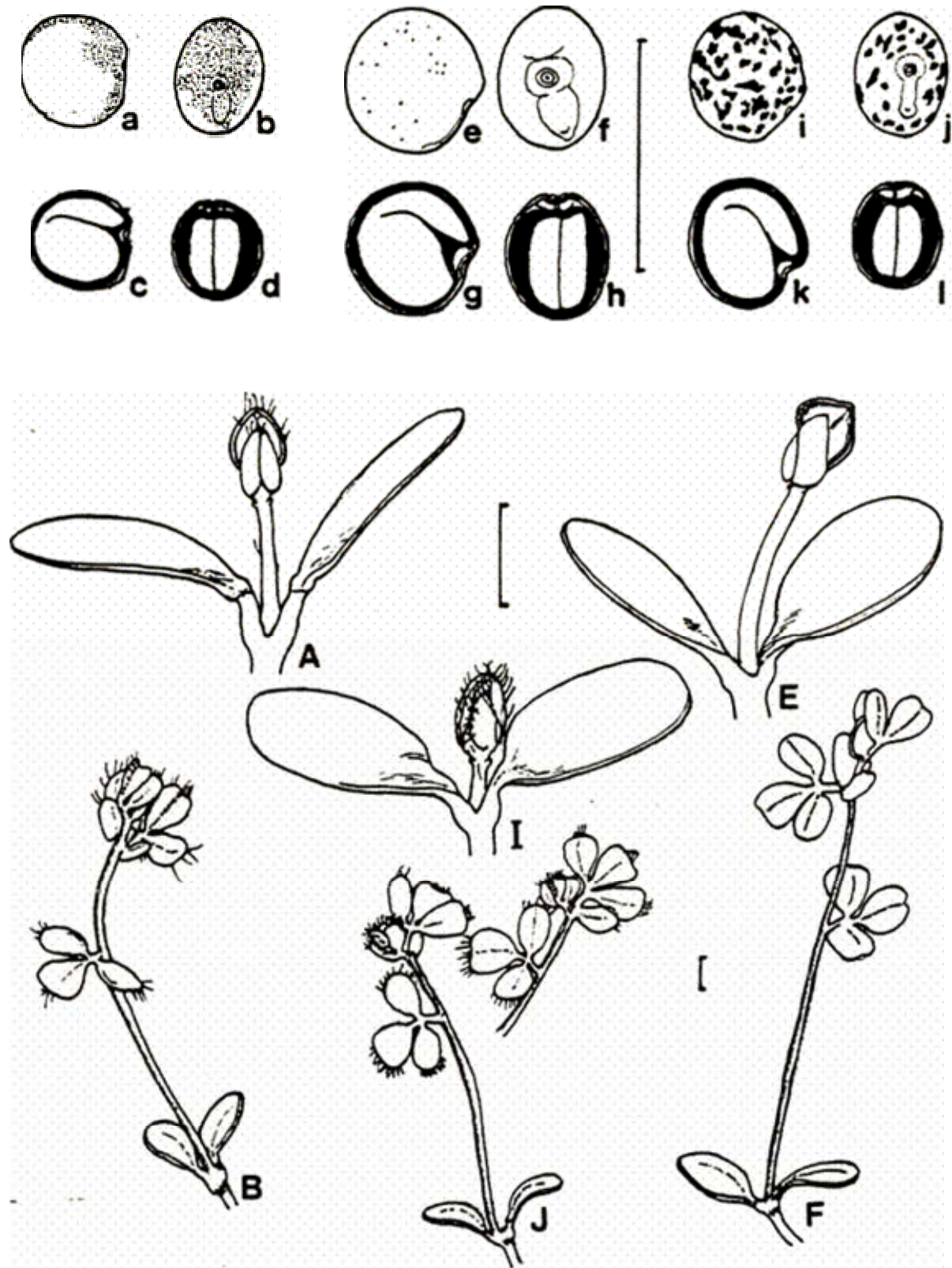


Fig.1, *Lotus angustissimus* L., a,b,c,d,A,B; *L. palustris* Willd, e,f,g,h,E,F; *L. suaveolens* Pers. i,j,k,l,I,J . Endosperm in black. Scales = 2 mm.