

LUPINUS DATABASE - a preliminary review (www.igr.poznan.pl)

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Introduction

The Lupinus database is a consequence of the initial idea for the World Lupinus database presented on the Vth International Lupin Conference at Poznań, 1988.

Creation of the European Lupin Gene Resources Database was initiated on the First Meeting of ECP/GR Working Group on Grain Legumes organized by the IPGRI at Copenhagen/Denmark (13-16.07.1995).

The first version of the common database for world Lupinus collections was presented on the IXth International Lupin Conference at Klink, 1999.

Updated version – XIIIth International Lupin Conference at Poznań, 2011

***LUPINUS* DISTRIBUTION - NEW WORLD**

(OVER 200 SPECIES) $2n=48$ - *From the Andes to the Arctic*

- *500 taxa - over 1700 different names,**
- *small seeds,**
- *ornamental Russel lupin + other perennial for erosion control and soil improvement,**
- *adaptation to survive in extreme environmental conditions**

North America: **annual and perennial**

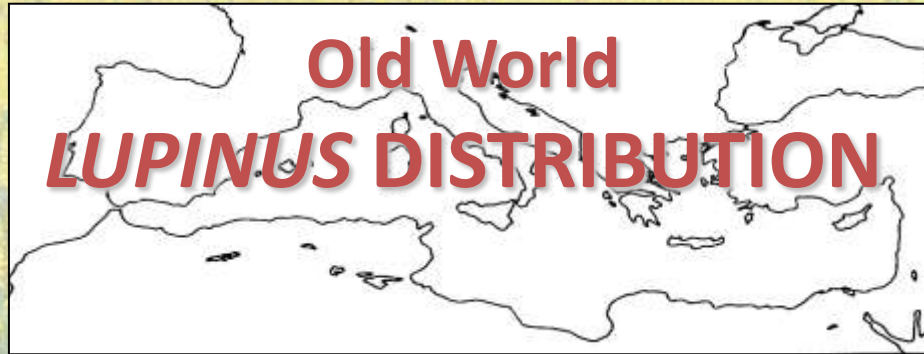
South America:

- Andean region: *L. mutabilis* (high Andes of Peru, Colombia, Ecuador, Bolivia) + small seeded lupins**
- Atlantic region: lupins with simple and composed leaves**

L. gibertianus

L. bandeliere

L. paranensis



Smooth - seeded.

Rough-seeded.

L. albus (2n=50)

L. angustifolius (2n=40)

L. luteus (2n=52)

.....
L. hispanicus (2n=52)

subsp. *hispanicus*

subsp. *bicolor*

L. anatolicus → ?

L. xhispanicoluteus

L. micranthus

GROUPS (chromosome number
and size, interspecific crossing ability):

PRINCEI (equatorial Africa)

- *L. princei*,

PILOSUS (eastern
Mediterranean basin)

- *L. pilosus*, *L. palaestinus*,

ATLANTICUS
(north-western Africa)

- *L. atlanticus*, *L. digitatus*,
L. cosentinii.

L. albus



Distribution:

**Mediterranean basin,
northern and eastern
African countries, Azores,
Madiera, Canary Islands,
Greece**

**Gaps/future expeditions:
Albania, Turkey,
Georgia, Greece,
Mediterranean isls.
with alkalic soils, some,
of the Atlantic Ocean isls.**



 Var. *albus* (cultivated only)  Var. *graecus* (wild) + var. *albus* (cultivated)

L. angustifolius

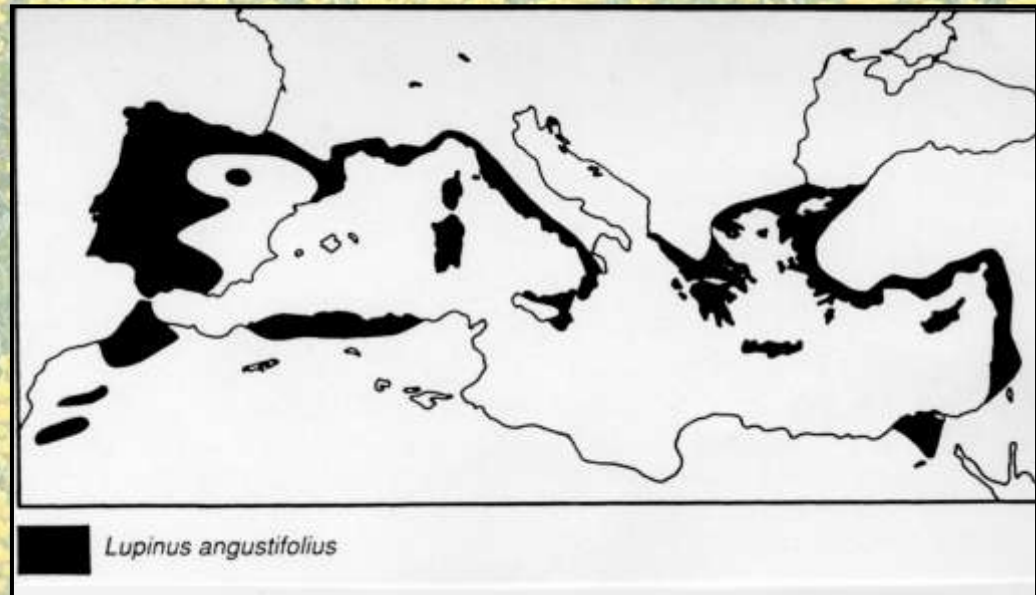


Distribution:

**Spain, Portugal,
Marocco, Tunisia,
Italy and Sicily,
Balkans, Near East.**

Gaps/future expeditions:

**Some of the Greek and Turkish
Isls., Morocco around Demnate,
Amizmiz, the Anti-Atlas
Mountains,
north-west of the Atlas
Mountains, Algeria,
Libya, Tunisia, Israel and
Lebanon,
L. linifolius - from Sicily.**



L. luteus



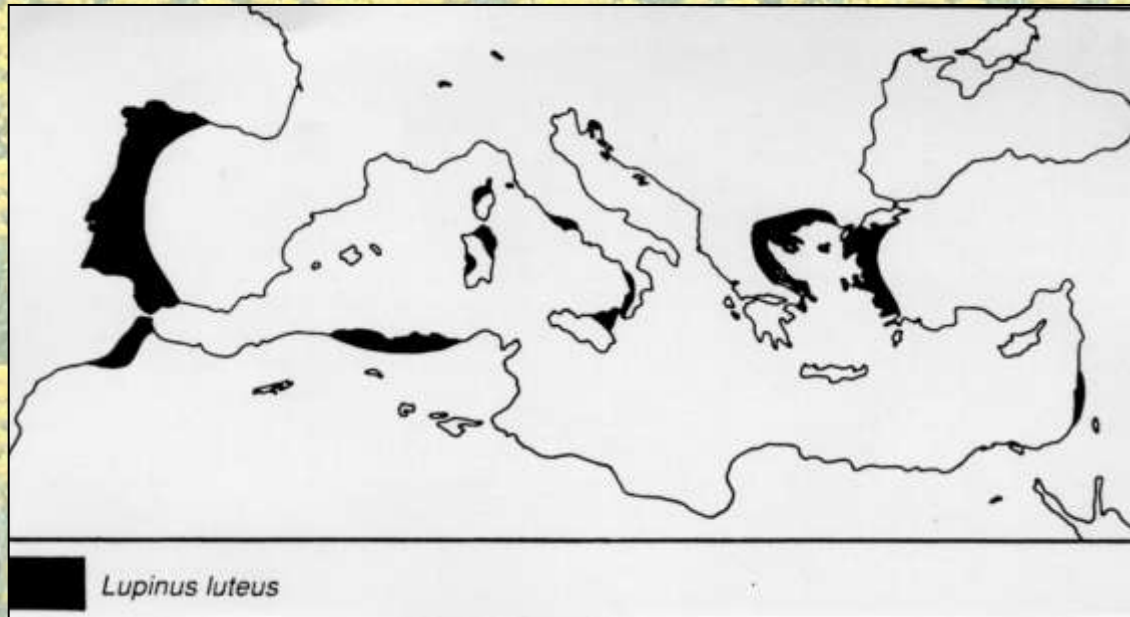
Distribution:

Iberian Peninsula,
coastal Israel and Lebanon,
Madiera, Azores Islands,
Greece, Turkey.

Syria (short vegetation)
- subsp. *orientalis*, Aegean
region.

Gaps/future expeditions:

Sardinia, Sicily, south
Italy,
Regio di Calabria (yield
structure), Israel,
Lebanon,





 *L. digitatus*


Mountainous areas of the southern Sahara.

8 accs. available.

GAPS: The senegal River Valley. Southern Algeria.

 *L. atlanticus*

Morocco **GAPS:** The Anti-Atlas Mountains, south from the Kerdous Plateau, mountains around Amizmiz area around Demnate into the mountains between Demnate and Beni Mellal.

 *L. princei*

highlands of Kenya, southern Ethiopia, northern Tanganyika.

6 accs. available.

GAPS: Highlands of Kenya, Ethiopia, Tanzania

 *L. somaliensis*

herbarium specimen.

GAPS: The mountain range in northern Somalia.



Donor institutions and curators of the *Lupinus* collections passport data

1.	Czech Republic	CZE090	AGRITEC, Ltd. Sumperk, Zemedelská 16, 787 12 Sumperk Tel.: + 420 583 382 111, Fax: + 420 583 382 999 (Iva Faberova: faberova@vurv.cz)
2.	Czech Republic	CZE079	The Silva Tarouca Research Institute for Landscape and Ornamental Gardening, Kvetnove nam. 391, 252 43 Pruhonice Tel.: +420 296 528 111, Fax: +420 267 750 440, email: vukoz@vukoz.cz
3.	France	INRA Dijon	INRA - Dijon, 17 Rue Sully - BP 86510, 21065 Dijon, FRANCE (Gerard Duc - Laboratories des Legumineuses, URGAP-INRA, BP 86510, 21065 Dijon cedex, France, Tel: (33)380693148/3000 (switch), Fax: (33)380693263, email: duc@epoisses.inra.fr)
4.	Germany	DEU146	Leibniz Institute of Plant Genetics and Crop Plant Research (IPK) Corrensstr. 3, 06466 Gatersleben, Germany, Phone: +49 (0)39482 5-0, Fax: +49 (0)39482 5139 Email: info(at)ipk-gatersleben.de
5.	Netherlands	NLD037	Centre for Genetic Resources, The Netherlands (CGN) Wageningen University and Research Centre, P.O Box 16, 6700 AA Wageningen, the Netherlands, visiting adress: Bornsesteeg 65, building 122. (Bert Visser: noortje.bas@wur.nl)
6.	Poland	POL003	Poznan Plant Breeders Ltd., 62-100 Wagrowiec, Wiatrowo 16. (Pawel Barzyk: pbar@igr.poznan.pl)
7.	Portugal	PRT005	Instituto Nacional de Recursos Biologicos (INRB) INIA - Oeiras Quinta do Marquês, 2784-505 Oeiras Portugal (Maria Manuela Veloso mveloso.inrb@gmail.com, http://www.inrb.pt/inia/o-inia/contactos/uirgemp-banco-portugues-de-germoplasma-vegetal)

c.d.

8.	Portugal	PRT018	Instituto Superior de Agronomia, Departamento de Botânica e Engenharia Biológica (DBEB), Tapada da Ajuda, 1349-017 Lisboa - PORTUGAL. (J. M. Neves-Martins, http://www.isa.utl.pt/dbeb/)
9.	Portugal	PRT102	ISOPlexis - Banco de Germoplasma, Centro de Estudos da Macaronésia, Universidade da Madeira, Campus da Penteada, 9000-390 Funchal, email: isoplexis@uma.pt (http://www3.uma.pt/cem/isoplexis/index_eng.html)
10.	Slovakia	SVK001	CENTRUM VÝSKUMU RASTLINNEJ VÝROBY (Plant Production Research Center) PIEŠŤANY. Address: Bratislavská cesta 122, 921 68 Piešťany, Slovak Republic. (Maria Zakova: zakova@vurv.sk)
11.	Spain	ESP004	Instituto Nacional de Investigacion y Tecnologia Agraria y Alimentaria, Centro Nacional de Recursos Fitogeneticos, Autovia de Aragon Km 36, Apdo. 1045, 28800-Alcala de Henares, Madrid, Spain. (Lucia De la Rosa: rosa@inia.es)
12.	USA	USA DAPUL	Western Regional Plant Introduction Station, 59 Johnson Hall, Pullman, Washington 99164-6402 USA (Clarice J. Coyne: coynec@wsu.edu)
13.	Australia	UWA CLIMA	University of Western Australia, Centre for Legumes in Mediterranean Agriculture, 35 Stirling Highway, Crawley Western Australia 6009 (Jonatan Clements: jon.clements@agric.wa.gov.au)

No.	Species	NLD 037	SVK 001	INRA ECPGR	ESP 004	USA DAPUL	DEU 146	UWA CLIMA	CZE 090	POL 003	PRT 018	PRT 005	PRT 004	PRT 102	TOTAL
21	<i>citrinus</i>					1									1
22	<i>coccinnus</i>					3									3
23	<i>cosentinii</i>				17	5	11	251		5		22			311
24	<i>cryptantus</i>									1					1
25	<i>densiflorus</i>						3	1							4
26	<i>digitatus</i>					3		4		1					8
27	<i>douglasi</i>									1					1
28	<i>elegans</i>					2				1					3
29	<i>exaltus</i>							2							2
30	<i>excubitus</i>					1									1
31	<i>formosus</i>					1									1
32	<i>garfieldensis</i>					2									2
33	<i>gibertianus</i>							1							1
34	<i>graecus</i>									10					10
35	<i>gredensis</i>				107										107
36	<i>havardii</i>					2									2
37	<i>hirsutissimus</i>					2	1	2							5
38	<i>hirsutus</i>									2					2
39	<i>hispanicus</i>				102	45	48	98		16	3	103			415
40	<i>hispanicoluteus</i>									7					7
41	<i>hybrid</i>					5									5
42	<i>hybridus Lem.</i>							1							1
43	<i>Interspecific cross</i>							8							8

No.	Species	NLD 037	SVK 001	INRA ECPGR	ESP 004	USA DAPUL	DEU 146	UWA CLIMA	CZE 090	POL 003	PRT 018	PRT 005	PRT 004	PRT 102	TOTAL
44	<i>latifolius</i>					7		1							8
45	<i>lepidus</i>					20									20
46	<i>leucophyllus</i>					55	1								56
47	<i>liniifolius</i>									4					4
48	<i>littoralis</i>					6									6
49	<i>longifolius</i>							1							1
50	<i>luteolus</i>					4									4
51	<i>luteus</i>	56	18		303	86	132	463	26	354	78	283			1799
52	<i>mariae-josephi H. Pascual</i>				2										2
53	<i>mexicanus</i>					8	5	6							19
54	<i>micranthus</i>				12		20	51		1		10			94
55	<i>microcarpus</i>					10		3							13
56	<i>multiflorus</i>					1									1
57	<i>mutabilis</i>				20	79	30	221	2	17	150				519
58	<i>nanus</i>					5	3	1	1	3					13
59	<i>nevadensis</i>					1									1
60	<i>nootkatensis</i>					15	2								17
61	<i>pachylobus</i>					1									1
62	<i>palaestinus</i>						3	10		6					19
63	<i>paniculatus</i>									1					1
64	<i>parviflorus</i>					1									1
65	<i>perennis</i>				1	1	1								3
66	<i>pilosus</i>					61	14	189		6	1				271

No.	Species	NLD 037	SVK 001	INRA ECPGR	ESP 004	USA DAPUL	DEU 146	UWA CLIMA	CZE 090	POL 003	PRT 018	PRT 005	PRT 004	PRT 102	TOTAL
67	<i>polycarpus</i>						1	1							2
68	<i>polyphyllus</i>				1	49	28	12	17	2					109
69	<i>princei</i>							6							6
70	<i>pubescens</i>						15	1		1					17
71	<i>pusillus</i>					3									3
72	<i>rivularis</i>					6	1								7
73	<i>rothmaleri</i>											58			58
74	<i>rotundiflorus</i>							1							1
75	<i>sericeus</i>					60		2							62
76	<i>sparsiflorus</i>					1		1							2
77	<i>stiversii</i>					3									3
78	<i>subcarnosus</i>					8	8	2							18
79	<i>subvexus</i>						1								1
80	<i>succulentus</i>					4	10	3	1	1					19
81	<i>sulphureus</i>					11									11
82	<i>texensis</i>					2		1							3
83	<i>truncatus</i>						1	6							7
84	<i>variicolor</i>					1	1								2
85	<i>Lupinus sp.</i>			1	4	75	1905	13				1		7	2006
	Total	69	54	254	1843	1293	2767	4665	107	1169	648	1077	11	7	13964

Statistics

Total number of acc. – 13 964

↪ **13 centers, 10 countries**

↪ **76 per cent – Old World lupins (10 663 acc.)**

↪ **57 per cent in European centers (AUS – collecting expeditions, USA – New World lupins)**

↪ **71 per cent – lupin crops
(*L. albus*, *L. angustifolius*, *L. luteus*,
L. mutabilis)**

Passport data in lupin collections

			1	2	3	4	5	6	7	8	9	10
No	Country	Institution	INSTCODE	ACCENUMB	GENUS	SPECIES	SUBTAXA	ACCENAME	DONOR	DONORCODE	ORIGCTY	SAMPSTAT
1	Netherlands	NLD037	x	x	x	x	x	x		x	x	x
2	Slovakia	SVK001	x	x	x	x	x	x	x	x	x	x
3	France	INRA ECPGR	x	x	x	x		x		x	x	x
4	Spain	ESP004	x	x	x	x		x		x	x	x
5	USA	USA DAPUL		x	x	x	x	x	x		x	x
6	Germany	DEU146	x	x	x	x	x	x	x	x	x	x
7	Australia	UWA CLIMA		x	x	x	x	x	x		x	x
8	Czech Republic	CZE090 CZE079	x	x	x	x		x			x	x
9	Poland	POL003	x	x	x	x	x	x	x		x	x
10	Portugal	PRT005 PRT018 PRT102	x	x	x	x	x	x			x	x

Descriptors for a common database

No.	Descriptor	Abbreviation	Explanation
1.	Institution code	INSTCODE	Code of the institution where the accession is maintained (according to EURISCO if possible)
2.	Accession number	ACCENUMB	Unique identifier for accessions within a genebank collection
3	Genus	GENUS	Scientific name of the genus
4.	Species	SPECIES	Specific epithet portion of the scientific name in lowercase letters followed by the author
5.	Subtaxa	SUBTAXA	Taxonomic identification below the species level
6.	Accession name	ACCENAME	Name designated to the accession
7.	Donor	DONOR	Name of a person or institution which donated the material to the genebank
8.	Donor institution code	DONORCODE	Code for the donor institution
9.	Country of origin	ORIGCTY	Code of the country in which the sample was originally collected. Use the 3-letter ISO 3166-1 extended country codes
10.	Status of sample	SAMPSTAT	Biological status of accession

Conclusions

↪ differentiated data bases

↪ not available info on S. American lupin resources

↪ urgent collecting missions (wild lupins, e.g. *L. digitatus*, *L. princei*, no accession of *L. somaliensis*)