

COLLECTION OF GLIRICIDIA SEPIUM SEED IN CENTRAL AMERICA
FOR PROVENANCE TRIALS

by

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INTRODUCTION

Traditionally Gliricidia sepium (Jacq.) Steud. is one of the most popular multi-purpose species in Central America. It is used for live fences, to provide shade for coffee and cocoa and for production of wood, fodder, honey and human food

Its ease of reproduction, both by seeds and vegetatively, the ease with which it can be established and managed, and its flexibility in a broad range of ecological conditions are widely known. This has made it one of the species most commonly planted in urban areas, as well as by farmers with small or medium resources

The traditional propagation method is by cuttings of different sizes obtained from clonal plantations representing a small number of genotypes. The dangers of using such narrow germplasm bases are well known. Since the species is naturally distributed in Central America (Little, 1983), it is still possible to locate natural stands which could and should be used as germplasm sources to obviate the risks involved in repeated vegetative propagation. It is therefore desirable to draw upon a broad range of germplasm sources in order to widen the genetic base of the populations in use and also to select the best parent stocks for a broad range of climatic, soil and utilization conditions.

NATURAL DISTRIBUTION

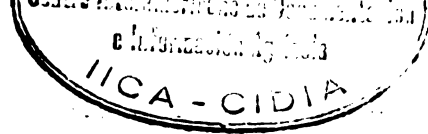
The species is distributed naturally from southern Mexico, through Central America, to Colombia, Venezuela and Guyana. Its altitudinal range is from sea level to 1,600 m (in Central America it has been found growing wild up to 1,400 m in Guatemala); it grows on different soil types such as sand and sandy, clayey, calcareous, eroded and stony soils. Good natural stands have been observed in areas with an annual rainfall of 800 mm to 2,300 mm.

PHENOLOGICAL OBSERVATIONS

Flowering in G. sepium appears to be related to the beginning of the dry season, so that its onset varies according to latitude. In Guatemala, where the dry season starts at the end of October, flowering begins in January and extends until early March, while in Costa Rica, where the dry season begins at the end of November, flowering starts in February and continues until April.

In Guatemala, as in the Pacific area of Nicaragua, seed is collected from the end of February until the beginning of April, with a peak in mid-March. In Costa Rica collection begins at the end of April and ends early in June. In Colombia, July has been reported as the flowering season and September as that of seed collection.

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LOCATION OF STANDS FOR SEED COLLECTION

Five natural stands were identified in Costa Rica for seed collection in 1984. Because of an abnormal storm accompanied by strong wind in mid-April 1984, which affected the fruits, seed was unobtainable from three of these. Since seed could only be harvested from the remaining two coastal stands (lots 1812, 1816) it was decided to collect seed from live fences (of which there are more than 20 km), selecting one out of every 15 to 25 trees as a seed tree, provided that it bore seeds. The live fences from which collections were made were sub-divided to represent four "provenances". The same method for obtaining seeds was used in Guatemala (lot 1868) in the hope of obtaining wide variability. In all, seed was collected from a total of more than 1,200 trees representing 24 "provenances". 1/ Of these "provenances", six are from live fences (five in Costa Rica, one in Guatemala), and eighteen from natural stands (sixteen in Guatemala, two in Costa Rica) (see Table 1 and map).

FUTURE RESEARCH

1. Range-wide tests. To determine the variation between provenances (Burley, Wood and Lines, 1970) all the provenances collected in different ecological conditions (altitude, precipitation, temperature and soils) in Central America will be tested. In Guatemala the work has been started at four sites; this test will be complemented by studies on behaviour in the nursery. After selecting the most promising provenances for the different areas represented by the test sites, steps will be taken to ensure abundant seed supplies.
2. Identification of other seed sources in Central America. Seed will be collected from natural stands in Honduras, El Salvador and perhaps two sites in Nicaragua and one site in northern Guatemala.
3. Conservation of seed sources. The provenances from natural stands in Costa Rica come from areas protected by government laws, while live fences, because of their value to the owners, are unlikely to be destroyed. In Guatemala the natural stands are located on state lands and their conservation can be ensured through coordination with the Servicio Forestal Nacional (National Forest Service).

REFERENCES

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Forestry Papers No. 10.
- Little, E. Common fuelwood crops. Communi-Tech Associates, West Virginia, USA. (354 pp.)
1982

1/ Persons interested can purchase seeds by contacting the Banco Latinoamericano de Semillas Forestales, Departamento de Recursos Naturales Renovables, CATIE, Turrialba, Costa Rica.

Table 1. DATA FOR GLIRICIDIA SEPIUM PROVENANCE COLLECTIONS

BLSF Lot No.	PROVENANCE LOCATION	LONGITUDE NORTH	LATITUDE WEST	ALTITUDE m.-s.l.	MEAN ANNUAL RAINFALL (mm)	DRY MONTHS	SOIL	VIA BLE SEEDS TO B	QUANTITY COLLECTED (g)
1866	Ipala, Guatemala	14°41'	89°36'	830	500	7	Black clay loam	78	1100
1867	Agua Blanca, Jutiapa, Guatemala	14°30'	89°38'	890	1000	6	Deep black clay loam, seasonally flooded	79	1350
1868*	La Miquina, Guatemala	14°13'- 14°14'	91°34'- 91°36'	100	1300	5	Deep alluvial clay	80	1500
1869	Suchitán, Guatemala	14°23'	89°43'	980	1500	6	Shallow, volcanic clay	82	1600
1870	Km 162, Chiquimula, Guatemala	14°51'	89°30'	380	550	7	Shallow, stony clay	79	1300
1871	San Luis Jilotepeque, Guatemala	14°40'	89°44'	830	700	6	Black clay	55	2200
1872	Guailán, Guatemala	15°06'	89°22'	130	1200	5	Shallow, stony clay	81	1900
1874	Mulús, Guatemala	14°33'	91°32'	350	2200	5	Deep river sand	80	2300
1856	Vado Mondo, Chiquimula, Guatemala	14°44'	89°30'	380	800	6	Deep alluvial sandy clay loam	79	1150
1857	Vado Mondo, Chiquimula, Guatemala	14°43'	89°30'	380	850	6	Shallow, stony, clayey, latosol	65	1100

Table 1. (contd.)

BLSF Lot No.	PROVENANCE LOCATION	LONGITUDE MORTH	LATITUDE WEST	ALTITUDE m.a.s.l.	MEAN ANNUAL RAINFALL (mm)	DRY MONTHS	SOIL	VARIABLE SEEDS 10 g	QUANTITY COLLECTED (g)
1858	La Gloria, Atescatempa, Guatemala	14° 10'	89° 44'	620	1500	6	Clay	65	350
1859	Concepción Las Minas, Guatemala	14° 31'	89° 28'	950	1300	5	Clay	82	500
1860	Azulco, Guatemala	14° 05'	90° 03'	1050	2000	4	Calcareous clay	80	800
1861	Agua fría, Atescatempa, Guatemala	14° 09'	89° 45'	620	1500	6	Clay	68	900
1863	Ortoría, Guatemala	14° 14'	90° 19'	955	2000	4	Deep, sandy volcanic loam	79	900
1864	Monterico, Guatemala	13° 28'	90° 28'	4	800	6	Sand	76	970
1865	Piedras azules, Gualán, Guatemala	15° 06'	89° 21'	130	1200	5	Shallow, stony clay	81	1000
1811*	Mucas, Guanacaste, Costa Rica	10° 21'- 10° 24'	85° 44'- 85° 47'	40	2300	5	Shallow, black, clayey, latosol	75	1000
1812	Playa Tamarindo, Costa Rica	10° 19'	85° 49'	3	2300	5	Coastal sand	75	750
1813*	Villareal-Santa Cruz, Costa Rica	10° 16'- 10° 29'	85° 45'- 85° 49'	25	1900	5	Deep, alluvial, sandy loam	79	1530
1815*	Filadelfia-Liberia, Costa Rica	10° 26'- 10° 29'	85° 27'- 85° 33'	50	1800	5	Deep clay loam, chernozem or alluvial	77	170

(Contd.)

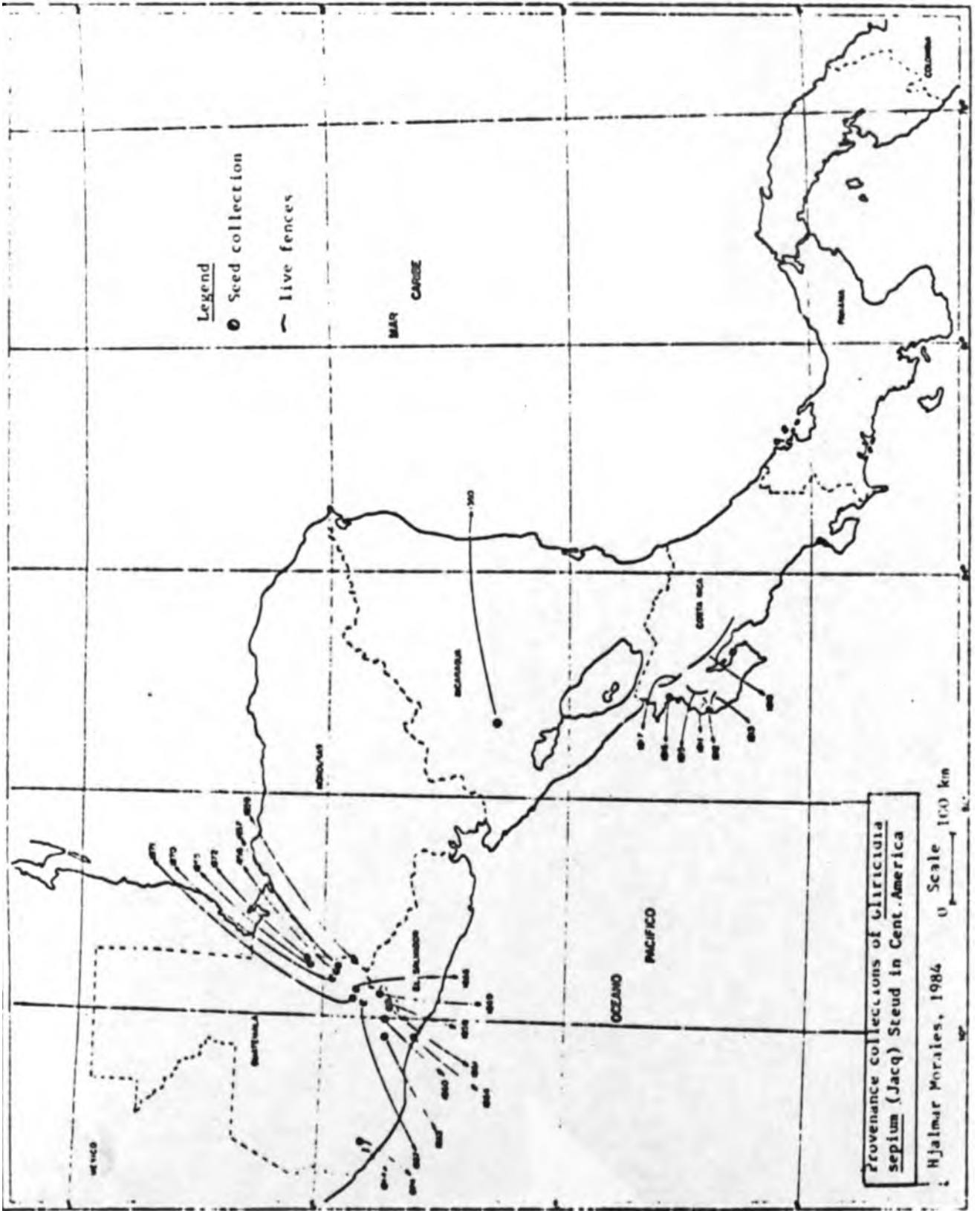
Table 1. (contd)

BLSF Loc No.	PROVENANCE LOCATION	LONGITUDE MOUTH	LATITUDE WEST	ALTITUDE m.a.s.l.	MEAN ANNUAL RAINFALL (mm)	DRY MONTHS	SOIL	VIABLE SEEDS 10 g	QUANTITY COLLECTED (g)
1816	Playa Maranjo, Costa Rica	10° 47'	85° 38'	50	1700	5	Coastal sand	78	520
1817	Santa Rosa-Liberia, Costa Rica	10° 37'- 10° 58'	85° 27'	150	1650	5	Shallow clay loam, Chernozem and alluvial	80	430
1818*	Liberia-Esparza, Costa Rica	10° 00'- 10° 37'	84° 42'- 85° 27'	120	1600	4-5	Deep clay loam, latosol and planosol	82	640
1360**	Matagalpa, Nicaragua	12° 50'	85° 55'	600	2300	5	Deep, soft, silty clay loam	66	180

* Seed obtained from live fences sampled as described in text.

** Old collection, made jointly by the Instituto Nicaraguense de Recursos Naturales y del Ambiente (IRENA) and the Banco Latinoamericano de Semillas Forestales (BLSF) of CATIE.

NOTE: It is expected that additional collections will become available from the Dirección de Recursos Naturales Renovables (RENARE) in Panama and IRENA in Nicaragua.



Provenance collections of *Clitricidia septium* (Jacq) Steud in Cent. America

Hjalmar Moraies, 1984

Scale 100 km