Genetic Resources Communication

Genetic Resources Communication
No. 24, 1996

Morphological and agronomic attributes of a collection of the genus *Teramnus*

D.A. Eagles and B.C. Pengelly

ATFGRC

ATFGRC, CSIRO Division of Tropical Crops and Pastures, 306 Carmody Rd, St Lucia
Qld 4067, Australia

ISSN 0159-6071
ISBN 0 643 05907 5

Genetic Resources Communication
No. 24, 1996

Morphological and agronomic attributes of a collection of the genus *Teramnus*

D.A. Eagles and B.C. Pengelly

CSIRO Division of Tropical Crops and Pastures, 306 Carmody Rd, St Lucia,
Qld 4067, Australia

Morphological and agronomic attributes of a collection of the genus *Teramnus*

D.A. Eagles and B.C. Pengelly

CSIRO Division of Tropical Crops and Pastures, 306 Carmody Rd, St Lucia, Qld 4067, Australia

Abstract

Data for thirteen morphological and agronomic attributes of a collection of 275 accessions of the genus *Teramnus* grown in the field at Samford Research Station (latitude 27°22'S) are presented together with provenance data as an aid to research workers intending to carry out further evaluation or studies on this genus. The collection included seven of the eight species recognised in the genus.

Keywords

Teramnus, tropical legume, numerical analysis, characterisation

Introduction

The tropical legume genus *Teramnus* is closely allied to *Glycine* but can be distinguished from it by its alternately aborted or sterile stamens, and seed pods with a persistent style lengthened to form a right-angled hook at the apex (Verdcourt 1970). The genus has a pantropical distribution and occurs from approximately 23°N (India) to 29°S (South Africa). There are eight species in the genus - *T. beuttneri, T. flexilis, T. labialis, T. micans, T. mollis, T. repens, T.uncinatus* and *T. volubilis.*

Teramnus spp. have not been used widely as a forages although *T. labialis* has been used as a component in perennial pastures in Cuba (Funes and Perez 1976), where limited evaluation has been carried out (Funes and Yepes 1974; Febles and Funes 1978). The genus has also been studied in Australia (Evans 1967) and Florida (Williams 1988).

The Australian Tropical Forages Genetic Resource Centre (ATFGRC) has assembled a collection of 275 accessions of *Teramnus.* With the exception of *T. beuttneri*, all species in the genus are represented in the collection. As a first step in determining the extent of variation in the genus and identifying accessions for evaluation in different environments, it is necessary to identify groups with similar attributes. Several authors have successfully used pattern analysis of morphological and agronomic data to identify groups and core sets of accessions to facilitate further evaluation (Burt *et al.* 1971; Edye *et al.* 1973).

Pengelly and Eagles (1996) used a numerical approach to classify the ATFGRC collection of *Teramnus*. The present paper provides provenance data of the 275 accessions classified and attributes of the groups resulting from the analysis. These data are of potential value to researchers concerned with selection of specific accessions for further study.

Materials and methods

Cultural conditions

Scarified seed of each of 275 accessions was germinated on 1% agar before being transferred to 6 cm peat pots in a glasshouse at the CSIRO Pasture Research Station, Samford (27°22'S and 152°53'E). The sand - peat potting medium contained a basic fertiliser mix and pH was adjusted to between 5.5 and 6.0. Seedlings were inoculated with *Bradyrhizobium* sp. strain CB756.

Seedlings were transplanted to the field in November 1988, approximately 45 days after sowing (DAS). The soil was an alluvial-prairie intergrade, the pH in the surface 10 cm was 5.6 to 6.0 increasing with depth to pH 7.5 at 1 m. P, K and Ca in the surface profile were adequate for normal plant growth (C.H. Thompson pers. comm.). The altitude at the site was ca. 30 m.

Table 1. Meteorological data for Samford Research Station, for the period November 1988 to October 1989.

	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Total rainfall (mm)	34	297	65	94	140	590	209	25	53	48	19	40
Evaporation (mm)	215	157	170	120	107	96	60	64	79	101	147	168
Mean max temp (°C)	29.7	28.5	28.9	26.9	27.4	25.8	23.2	20.1	19.1	20.8	24.7	28.4
Mean min temp (°C)	14.6	18.7	18.3	18.1	18.2	16.7	14.2	9.6	8.1	5.2	7.8	13.0

Ten plants of each accession were planted on weed control matting, 4 x 1.8 m, with 70 cm between rows of matting. Seedlings were planted at 50 x 50 cm spacings. No fertiliser was applied either before or after planting. The planting was not replicated.

Relevant climatic data for the period November 1988 to October 1989 were recorded c. 400 m from the experimental site (Table 1). The first frost was on July 14, and 13 frosts were recorded for the winter of 1989. The lowest minimum grass temperature recorded was -3°C. As the experimental site was at a lower elevation than the meteorological station, grass temperature would have been lower than the-3°C recorded.

Table 2. Morphological and agronomic attributes presented for 275 accessions of *Teramnus*.

	Coding	Observation
Ordinal attributes		
Stolons	St	0 (no stolons) - (4) strongly stoloniferous
Frost damage	FrD	1 (no damage) - 5 (plants dead); 6 (annuals)
Adaxial leaflet indumentum	LHDAd	0 (glabrous) - 4 (very dense)
Numeric attributes		
Cotyledon node height (mm)	CNH	
Canopy depth (cm)	CaD	Mean height of canopy
Days to first flower	DFFl	Days after sowing (DAS)
Terminal leaflet length (mm)	TLfLth	
Terminal leaflet width (mm)	TLfWth	
Terminal leaflet petiolule length (mm)	TLfPet	
Calyx teeth (number)	CalTth	
Pod length (mm)	PdLth	
Pod width (mm)	PdWth	
Seed weight (mm/100 seeds)	SdWt	

Attributes

Cotyledon node height, length and width were measured in the glasshouse 20 DAS. Internode length, number of nodes and the number of branches on the main stem were measured 40 DAS. Data for these attributes were the means of 3 plants taken at random for each accession. All other plant measurements were taken in the field.

The data presented here are of two attribute types: ordinal and numeric. Ordinal attributes imply an order only, the coded value "3" being larger than "1", but not necessarily three times larger than "1", *e.g.* stolon and frost ratings. Numeric attributes are those which were assessed on a linear scale and recognise a true zero value, *e.g.* canopy depth and leaf dimensions. Table 2 lists the 13 attributes which were most descriminatory in the classification analysis.

Results

Provenance data and descriminatory data, based on the classificatory analysis

Provenance data for the 275 accessions together with data for those attributes which contributed most to the classification are listed in Appendix 1. Accessions are listed by species and group number, the group number referring to those groups as established by numerical classification and described by Pengelly and Eagles (1996). The accession number is, in most cases, the Commonwealth Plant Introduction (CPI) number. The prefix "Q" denotes accession numbers issued by the Queensland Department of Primary Industries. Origin generally denotes the country of original collection. Where the country of origin is in parentheses, these denote that the country is a donor country, and not necessarily the country to which the accession is native.

Species and group characteristics

Teramnus flexilis. Plants with a vigorous, twining, prostrate habit and some stolons. They were late flowering and produced large pods with very large seeds. Leaflets were large with few hairs on the upper surface, and terminal leaflets had very long petiolules.

Teramnus labialis, Group 1. Strongly stoloniferous, late flowering plants with a prostrate and twining habit. The heights of the cotyledonary nodes were low, leaflets were small and glabrous, the terminal leaflets having very short petiolules. Very small seeds were produced in narrow pods.

Teramnus labialis, Group 2. Low yielding plants with a prostrate twining habit and few stolons. They were early flowering and were moderately susceptible to frost with some accessions dying. The upper surface of the leaflets was glabrous and pods were large seeded.

Teramnus labialis, Group 3. Very low yielding plants with a prostrate twining habit and few, if any, stolons. They were late flowering and moderately susceptible to frost. Leaflets were very small. Pods were small and contained a few large seeds.

Teramnus labialis, Group 4. Plants were low yielding and had a prostrate twining habit, with few stolons. Cotyledon node heights were very low and the plants were very early flowering. Large seeds were produced in short pods.

Teramnus labialis, Group 5. A large diverse group of stoloniferous accessions with a prostrate twining habit. Seedlings had low cotyledon node heights. Generally they were early flowering, and plants were moderately susceptible to frost.

Teramnus labialis, Group 6. Higher yielding plants with a vigorous twining habit and many stolons. Cotyledon node heights were low. Plants were mid-season to late flowering. Leaflets had few hairs on the upper surface.

Teramnus labialis, Group 7. Plants of average yield with a prostrate, twining habit and many stolons. Cotyledon node heights were high. They were early flowering, with large pods and seeds.

Teramnus labialis, Group 8. Late flowering plants of average yield with a prostrate twining habit. Seeds were relatively small and frost damage was considerable.

Teramnus micans. One accession only. Plants were very high yielding, were strongly stoloniferous and had an aggressive scrambling habit. Cotyledon node heights were low. Leaflets were very long and hairy. Plants were late flowering; pods were broad and the seeds large.

Teramnus mollis. Low yielding plants with a prostrate twining habit and lacking stolons. These accessions had low cotyledon node heights and suffered considerable frost damage. Plants were early flowering and some appeared to be annuals. Leaflets were small and glabrous.

Teramnus repens, Group 1. These plants were very early flowering annuals with a prostrate twining habit and many stolons. Cotyledon node heights were low. Leaflets were small and hairy, the terminal leaflets having short petiolules.

Teramnus repens, Group 2. Low yielding, early flowering plants, strongly stoloniferous and with a prostrate scrambling habit. Cotyledon node heights were very low. Leaflets were small, the terminal leaflets having very short petiolules. Pods and seeds were very small.

Teramnus uncinatus, Group 3. Two accessions only with a prostrate rather open twining habit and lacking stolons. Cotyledon node heights were very low. Flowering occurred mid-season. Terminal leaflet petiolules were very short as were the pods. Seeds were small.

Teramnus uncinatus, Group 6. High yielding plants with an aggressive twining habit but with few stolons. They were mid-season to late flowering and suffered considerable frost damage. Cotyledon node heights were high. Leaflets were long and hairy.

Teramnus uncinatus, Group 7. These plants were late flowering, high yielding, and had an aggressive twining habit and some stolons. Cotyledon node heights were low. Frost damage was high. Leaflets were large, the upper surface having few hairs. Pods were very long and contained large seeds.

Teramnus uncinatus, Group 8. Very high yielding, late flowering plants with an aggressive twining habit and few stolons. Cotyledon node heights were high. Leaflets were large and hairy. Seed pods were long and the seeds small.

Teramnus volubilis. Very low yielding, stoloniferous plants with a prostrate scrambling habit. The seedlings had very low cotyledon node heights. Leaflets were small and glabrous on the upper surface. Pods were small and contained very small seeds.

Acknowledgements

The technical advice of Mr C.H. Thompson and the support of the staff of the Samford Research Station are acknowledged.

References

Burt, R.L., Edye, L.A., Williams, W.T., Grof, B. and Nicholson, C.H.L. (1971) Numerical analysis of variation patterns in the genus *Stylosanthes* as an aid to plant introduction and assessment. *Australian Journal of Agricultural Research*, **22**, 737-757.

Edye, L.A., Burt, R.L., Williams, W.T., Williams, R.J. and Grof, B. (1973) A preliminary agronomic evaluation of *Stylosanthes* species. *Australian Journal of Agricultural Research*, **24**, 511-525.

Evans, T.R. (1967) Primary evaluation of grasses and legumes for the northern wallum of south-east Queensland. *Tropical Grasslands*, **1**, 143-152.

Febles, G. and Funes, F. (1978) Legume development in Cuba. *Cuban Journal of Agricultural Science*, **12**, 111-124.

Funes, F. and Perez, C. (1976) Agronomical studies on perennial soybean. I. Comparison between *Glycine wightii* and *Terammus labialis* under cutting and grazing conditions. *Cuban Journal of Agricultural Science*, **10**, 199-209.

Funes, F. and Yepes, S. (1974) Pasture introduction in Cuba. *Proceedings of XII International Grassland Congress*, **3**, 89-104.

Pengelly, B.C. and Eagles, D.A. (1996) Diversity in the tropical legume genus *Teramnus*. *Tropical Grasslands*, **30**, 298-307.

Verdcourt, B. (1970) Studies in the *Leguminosae-Papilionoideae* for the 'Flora of Tropical East Africa': II. *Kew Bulletin*, **24**, 263-284.

Williams, M.J. (1988) Potential of some tropical forage legumes for Florida's USA sand ridge. *Soil Crop Science of Florida Proceedings*, **47**, 184-189.

Appendix 1. Provenance data and morphological-agronomic characteristics which contributed most in the classification of a collection of 275 accessions of *Teramnus*.

Accession No.	Species	Gp	Origin	Lat.	Long.	Alt. (m)	Rain (mm)	pH	CNH (mm)	CaD (cm)	DFFl	St	FrD	TLfLth (mm)	TLfWth (mm)	TLfPet (mm)	LHDAd	CalTth	PdLth (mm)	PdWth (mm)	SdWt (mg/ 100)
105831	flexilis	10	Indonesia	9.40S	124.28E	320		5.5	14	20	204	2	3	81	56	18	1	4	nc[1]	nc	nc
105891	flexilis	10	Indonesia	9.40S	119.43E	490		8.0	10	14	196	2	4	79	49	16	1	4	nc	nc	1737
105897	flexilis	10	Indonesia	9.32S	119.02E	80		7.5	12	28	193	2	4	95	58	26	1	4	nc	nc	nc
108660	flexilis	10	Indonesia	8.29S	116.33E	480		7.5	10	12	193	2	4	84	54	20	2	4	56	4.8	1817
108661	flexilis	10	Indonesia	8.27S	116.35E	460		8.0	10	12	193	2	4	84	54	18	1	4	56	4.6	1532
108715	flexilis	10	Indonesia	8.42S	117.25E	340		7.5	12	15	178	2	4	80	55	19	1	4	60	4.4	1702
20743	labialis	1	(Kenya)						3	12	144	3	4	48	25	4	0	5	48	2.4	340
25339	labialis	1	(Kenya)						3	20	186	4	4	42	20	4	0	5	47	2.3	nc
43792	labialis	1	Zambia						10	10	159	3	4	42	28	4	0	5	46	2.4	386
43793	labialis	1	Zambia						3	12	192	3	4	43	31	4	0	5	50	2.4	470
45261	labialis	1	(Venezuela)						5	11	186	2	3	36	26	4	0	5	57	2.4	600
52799	labialis	1	Tanzania	3.20S	35.35E	1380	900		3	8	186	4	3	25	16	4	0	5	40	2.4	279
60376	labialis	1	Uganda	0.10N	31.57E	1000	1075	6.5	4	20	200	3	4	32	22	2	0	5	40	2.1	270
60377	labialis	1	Tanzania	3.20S	36.40E	1394	1000	7.0	2	22	119	4	4	33	21	2	0	5	46	2.4	358
60381	labialis	1	Zimbabwe	19.50S	28.16E	2273	750	6.0	3	10	183	3	4	32	20	4	0	5	34	2.4	404
67226	labialis	1	Uganda	0.27N	33.14E	1200	1300		7	20	189	3	4	33	24	2	0	5	42	2.0	287
77002	labialis	1	Zambia	15.39S	28.19E				6	13	189	4	3	43	29	2	0	5	54	2.6	394
114122	labialis	1	Ethiopia	11.49N	39.34E	2900	1000	8.0	4	13	143	3	3	41	28	5	0	5	46	2.2	388
114123	labialis	1	Ethiopia	11.32N	39.37E	2960	1200	8.0	5	9	137	3	3	56	26	4	0	5	50	2.5	394
114124	labialis	1	Ethiopia	11.32N	39.36E	3000	1200	8.0	7	23	163	3	3	44	20	5	0	5	44	2.4	317
114125	labialis	1	Ethiopia	11.13N	39.41E	2300	1200	7.0	5	12	165	3	4	43	27	4	0	5	52	2.6	382
114126	labialis	1	Ethiopia	10.47N	39.50E	1450	950	7.0	4	14	143	3	4	46	26	7	0	5	48	2.4	295
114127	labialis	1	Ethiopia	8.45N	36.28E	1900	1800	8.0	3	13	184	2	4	46	25	4	0	5	54	2.5	301
114128	labialis	1	Ethiopia	8.35N	38.00E	2080	1200	6.0	3	12	184	2	4	39	22	4	0	5	49	2.4	356
114130	labialis	1	Ethiopia	6.58N	40.31E	2090	950	8.0	5	7	137	2	3	42	23	6	0	5	44	2.7	511
114132	labialis	1	Ethiopia	6.04N	37.36E	1200	700	8.0	7	20	159	2	3	46	33	4	0	5	48	2.7	444
114134	labialis	1	Tanzania			1750	1000		6	15	185	3	3	36	24	3	0	5	55	2.5	408
114135	labialis	1	Tanzania			1950			5	24	118	3	3	43	24	4	0	5	44	2.4	356

Accession No.	Species	Gp	Origin	Lat.	Long.	Alt. (m)	Rain (mm)	pH	CNH (mm)	CaD (cm)	DFFl	St	FrD	TLfLth (mm)	TLfWth (mm)	TLfPet (mm)	LHDAd	CalTth	PdLth (mm)	PdWth (mm)	SdWt (mg/ 100)
33037	labialis	2	Jamaica	17.58N	76.48W				8	9	144	1	3	36	24	7	0	5	43	3.2	695
70388	labialis	2	St Kitts	17.25N	62.45W				7	12	130	3	4	46	30	11	0	5	40	3.0	644
73529	labialis	2	St Vincent	12.15N	60.10W				6	12	130	3	4	49	32	10	0	5	48	3.4	640
77249	labialis	2	Guam	13.28N	144.45E	10	2175		8	8	182	0	4	40	22	5	0	5	48	3.3	735
77250	labialis	2	Guam	13.28N	144.45E	5	2175		7	8	189	1	4	46	26	6	0	5	47	3.3	788
84138	labialis	2	India	18.03N	78.15E				8	8	119	0	4	35	22	8	0	5	50	3.4	723
92011	labialis	2	Cuba						7	15	119	1	3	50	22	10	0	5	36	3.2	419
104644	labialis	2	India	23.15N	77.34E	460	1200	7.5	6	20	101	2	4	64	42	12	0	5	54	3.0	889
104803	labialis	2	India	22.71N	80.34E	450	1420	6.5	5	20	68	2	4	50	31	13	0	5	50	3.3	834
104915	labialis	2	India	22.42N	77.52E	340	1400	7.0	5	14	79	1	4	50	36	10	0	5	58	3.2	799
104993	labialis	2	India	22.04N	76.05E	240	970	9.0	5	14	101	2	5	41	24	9	0	5	48	3.0	745
106025	labialis	2	India	20.28N	76.57E	350	890		5	15	100	0	4	52	31	8	0	5	49	3.2	777
106171	labialis	2	India	17.55N	79.49E	250	950		3	16	79	1	4	50	33	10	0	5	52	3.4	820
106179	labialis	2	India	17.49N	80.01E	240	950	8.0	7	15	79	0	4	47	31	12	0	5	48	3.6	801
106191	labialis	2	India	17.38N	80.55E	80	1000		5	11	121	0	5	46	29	8	0	5	43	3.2	925
106216	labialis	2	India	17.10N	81.09E	130	980		6	8	137	0	4	38	28	10	0	5	48	3.2	852
106219	labialis	2	India	17.04N	81.30E	70	1000		8	16	137	0	5	50	32	10	0	5	46	3.4	877
106234	labialis	2	India	17.20N	79.57E	230	950		7	4	109	0	5	36	26	8	0	5	35	3.0	677
106254	labialis	2	India	17.09N	79.28E	190	870		5	12	79	0	5	42	29	8	0	5	47	3.3	752
106301	labialis	2	India	15.24N	78.48E	330	800		5	11	114	1	5	54	33	9	0	5	54	3.2	898
106308	labialis	2	India	15.25N	78.46E	410	950		6	8	128	0	4	38	23	10	0	5	38	3.1	595
106309	labialis	2	India	15.23N	78.40E	290	800		5	7	114	0	4	46	28	8	0	5	40	3.6	706
106539	labialis	2	India	12.19N	76.46E	720	840		5	12	176	1	4	44	26	10	0	5	39	2.9	608
106584	labialis	2	India	14.20N	78.47E	200	750		4	9	123	1	4	39	24	8	0	5	40	3.4	841
Q24855	labialis	3	(Belgium)						7	4	201	1	5	32	18	6	1	5	nc	nc	nc
106705	labialis	3	India	8.21N	77.00E	10	1820		5	3	177	0	4	25	17	5	1	5	34	3.0	647
106720	labialis	3	India	8.07N	77.31E	40	1200		8	3	177	0	4	28	18	6	1	5	31	2.7	790
106729	labialis	3	India	8.11N	77.36E	10	1100		5	3	178	0	4	27	18	7	0	5	38	3.0	845
108710	labialis	3	Indonesia	8.41S	117.25E	190		8.0	10	4	178	1	6	24	17	8	1	5	nc	nc	725
108736	labialis	3	Indonesia	8.41S	118.18E	10		6.5	7	5	175	0	4	30	22	6	1	5	36	2.7	816
108742	labialis	3	Indonesia	8.44S	118.29E	60		6.0	7	nc	176	0	6	26	19	5	0	5	nc	nc	892

Accession No.	Species	Gp	Origin	Lat.	Long.	Alt. (m)	Rain (mm)	pH	CNH (mm)	CaD (cm)	DFFl	St	FrD	TLfLth (mm)	TLfWth (mm)	TLfPet (mm)	LHDAd	CalTth	PdLth (mm)	PdWth (mm)	SdWt (mg/ 100)
104982	labialis	4	India	22.28N	75.55E	440	1020		0	8	102	0	4	63	34	10	1	5	31	3.2	795
107291	labialis	4	South Africa						2	22	68	2	3	77	28	8	1	5	46	3.0	765
113334	labialis	4	Kenya						2	14	105	1	4	72	26	9	1	5	30	3.2	632
114113	labialis	4	(Cuba)						4	21	68	1	4	60	32	10	1	5	44	3.5	630
114136	labialis	4	Ethiopia	5.36N	39.21E	1860	850	5.5	2	10	109	0	4	72	29	10	1	5	37	3.4	964
23414	labialis	5	(Cuba)						5	13	76	1	4	48	24	10	1	5	37	3.3	474
33232	labialis	5	Puerto Rico						3	20	117	2	4	46	24	8	1	5	43	3.6	578
51602	labialis	5	Ghana						7	15	87	1	4	49	27	12	1	5	41	3.4	610
52786	labialis	5	South Africa	25.45S	28.12E	1500	650		4	12	108	2	4	65	27	8	1	5	46	3.0	757
52792	labialis	5	Seychelles	4.38S	55.28E				5	18	144	2	4	49	28	11	1	5	40	3.4	490
52793	labialis	5	Madagascar	23.08S	44.10E	300	550		7	15	110	1	4	48	29	8	1	5	41	3.4	389
52794	labialis	5	South Africa	25.45S	28.12E	1300	650		6	15	102	2	4	76	28	10	1	5	48	2.9	663
52796	labialis	5	Zambia			600	750		16	15	109	2	5	60	35	10	1	5	46	3.2	592
52797	labialis	5	Tanzania	6.15S	37.15E	500	800		3	21	160	1	4	93	36	12	1	5	41	3.2	643
52798	labialis	5	Malawi	14.10S	33.50E	1140	875		5	8	117	2	4	62	28	8	1	5	44	2.8	634
52802	labialis	5	Zimbabwe	19.25S	32.30E	900	600		3	18	105	0	4	77	20	10	1	5	40	3.5	828
60371	labialis	5	South Africa	24.55S	30.32E	1121	500	8.0	5	22	130	2	3	66	33	10	1	5	54	3.0	714
60378	labialis	5	Tanzania	5.12S	39.08E	30	1250	8.0	7	27	77	2	4	53	32	9	1	5	45	3.3	536
60379	labialis	5	South Africa	29.00S	29.53E	1273	750	6.5	5	12	94	2	5	59	30	12	1	5	42	3.6	745
60380	labialis	5	Zimbabwe	20.10S	28.27E	1212	550	8.0	6	10	107	2	5	76	36	8	0	5	45	2.9	623
68645	labialis	5	(Cuba)						7	8	73	1	4	55	20	9	1	5	35	3.2	565
70292	labialis	5	(Swaziland)						6	17	126	2	3	78	38	12	1	5	52	3.2	711
70378	labialis	5	Barbados	13.15N	59.33W				4	15	141	1	4	46	26	9	1	5	36	3.2	572
70379	labialis	5	St Lucia	13.50N	60.50W				5	20	113	1	4	50	30	10	1	5	40	3.4	613
70380	labialis	5	(Antigua)						8	24	73	2	4	53	24	9	1	5	38	3.4	572
70382	labialis	5	Antigua	17.08N	61.48W	30			3	18	114	1	4	46	26	8	1	5	42	3.4	549
70383	labialis	5	Antigua	17.08N	61.48W	30			4	15	114	1	4	47	28	11	1	5	43	3.4	669
70384	labialis	5	Antigua	17.08N	61.48W				3	20	119	2	4	46	26	10	1	5	46	3.2	596
70385	labialis	5	Antigua	17.08N	61.48W				5	18	119	2	4	52	29	11	1	5	44	3.2	596
70386	labialis	5	St Kitts	17.18N	62.42W				3	14	130	2	4	49	29	10	1	5	47	3.2	570
70387	labialis	5	Montserrat	16.45N	62.14W				3	18	141	2	4	52	31	10	1	5	46	3.4	544

Accession No.	Species	Gp	Origin	Lat.	Long.	Alt. (m)	Rain (mm)	pH	CNH (mm)	CaD (cm)	DFFl	St	FrD	TLfLth (mm)	TLfWth (mm)	TLfPet (mm)	LHDAd	CalTth	PdLth (mm)	PdWth (mm)	SdWt (mg/ 100)
73527	labialis	5	Antigua	17.00N	61.45W				4	18	146	1	4	49	28	9	1	5	39	3.4	564
73528	labialis	5	St Kitts	17.07N	62.35W				3	14	148	2	4	49	28	10	1	5	42	3.1	547
79675	labialis	5	Cuba	20.01N	75.01W	10	800		4	34	119	3	4	46	22	8	1	5	39	3.2	507
79676	labialis	5	Cuba	19.59N	76.21W	5	1000	7.0	3	29	130	3	4	48	26	11	1	5	42	3.2	472
82316	labialis	5	Cuba	20.01N	75.01W	10	800		4	22	142	3	4	50	26	12	1	5	42	3.2	590
82321	labialis	5	Cuba	20.38N	75.56W	50	1150	6.2	5	9	128	1	4	48	26	10	1	5	36	3.2	659
82322	labialis	5	Cuba	21.10N	76.30W	50	1000	6.2	8	9	77	1	3	56	27	11	1	5	34	3.0	652
82323	labialis	5	Cuba	21.08N	76.40W	50	1000	6.2	7	10	77	1	4	49	26	12	1	5	38	3.0	671
100454	labialis	5	Antigua						6	7	148	1	4	41	23	8	1	5	34	3.4	520
100455	labialis	5	Cuba						5	13	73	2	4	50	22	10	0	5	37	3.3	418
108673	labialis	5	Indonesia	8.34S	116.09E	5		7.5	6	9	165	1	4	34	26	6	1	5	42	3.0	487
108689	labialis	5	Indonesia	8.27S	117.19E	5		6.8	8	4	174	1	4	36	31	8	1	5	42	3.0	676
114118	labialis	5	Tanzania			1310			5	17	102	2	4	68	25	8	1	5	42	3.0	562
114133	labialis	5	(Ethiopia)						5	16	143	2	4	54	21	11	1	5	33	3.6	692
Q21623	labialis	6	(Cuba)						6	10	165	2	3	44	20	6	0	5	40	3.0	519
50514	labialis	6	(Philippines)						5	20	186	3	3	42	21	8	1	5	43	3.0	482
53868	labialis	6	Phillipines						3	10	186	1	4	48	19	10	1	5	47	3.1	nc
68644	labialis	6	(Cuba)						8	25	167	1	4	52	22	9	0	5	46	3.1	480
68646	labialis	6	(Cuba)						6	14	170	1	4	52	23	8	0	5	49	3.2	581
70381	labialis	6	(Antigua)						6	30	183	2	4	58	31	10	0	5	44	3.0	418
77251	labialis	6	Guam	13.17N	144.45E	5	2175		5	35	183	2	4	46	21	6	1	5	44	3.0	620
77252	labialis	6	Guam	13.24N	144.46E	30	2175		7	36	183	2	3	54	22	8	1	5	47	3.3	618
77253	labialis	6	Guam	13.25N	144.40E	70	2175		8	33	183	3	4	58	22	6	1	5	42	3.0	656
77254	labialis	6	Guam	13.24N	144.38E	5	2175		7	30	185	2	4	48	23	6	1	5	41	3.0	740
77255	labialis	6	Guam	13.20N	144.46E	5	2175		7	30	183	3	4	58	23	6	1	5	42	3.0	686
77282	labialis	6	Phillipines	14.13N	120.59E	300	2000		5	40	183	4	4	44	23	6	1	5	43	3.8	806
82319	labialis	6	Cuba	19.57N	76.30W	50	1100	7.0	7	23	170	3	4	53	34	13	0	5	50	3.4	625
92012	labialis	6	Cuba						3	30	168	2	4	56	30	10	0	5	41	2.8	454
92013	labialis	6	Cuba						5	28	169	2	3	55	26	10	0	5	44	3.0	534
105327	labialis	6	Indonesia	9.26S	119.37E	430		7.5	7	28	183	2	4	58	40	14	1	5	51	3.3	800
114112	labialis	6	(Cuba)						5	28	165	2	3	67	35	15	0	5	44	3.5	548

Accession No.	Species	Gp	Origin	Lat.	Long.	Alt. (m)	Rain (mm)	pH	CNH (mm)	CaD (cm)	DFFl	St	FrD	TLfLth (mm)	TLfWth (mm)	TLfPet (mm)	LHDAd	CalTth	PdLth (mm)	PdWth (mm)	SdWt (mg/ 100)
29770	labialis	7	(India)						10	20	126	2	4	37	24	7	1	5	54	3.0	855
60373	labialis	7	Kenya	4.04S	39.40E	30	1250	8.5	15	25	73	2	4	59	26	10	1	5	48	3.6	726
69508	labialis	7	Zimbabwe	19.31S	28.17E				10	10	128	2	3	59	30	6	1	5	54	3.0	775
81656	labialis	7	Kenya	3.37S	39.50E				15	28	107	2	4	61	28	12	0	5	45	3.6	585
106747	labialis	7	India	8.48N	77.43E	20	690		11	12	165	1	4	38	28	7	1	5	55	3.4	760
114117	labialis	7	Tanzania			430			14	30	125	2	4	74	32	8	1	5	50	3.8	661
114129	labialis	7	Ethiopia	9.07N	40.01E	800	500		12	9	109	1	4	50	32	7	1	5	49	3.4	753
52795	labialis	8	Zambia	8.50S	31.06E	800	1200		8	20	171	2	4	50	32	10	1	5	49	3.4	538
100125	labialis	8	Indonesia			5	1349	6.5	5	11	170	2	4	49	22	10	1	5	43	3.2	387
101574	labialis	8	Indonesia	10.11S	120.50E				8	28	183	0	5	45	36	9	1	5	36	3.0	nc
105207	labialis	8	Indonesia	0.42S	119.42E	60		6.5	7	15	183	2	4	55	40	12	1	5	42	3.4	nc
105279	labialis	8	Indonesia	9.05S	124.44E	30		8.0	8	16	180	0	4	47	34	10	1	5	54	3.6	492
105284	labialis	8	Indonesia	9.00S	124.54E	5		7.5	5	25	181	2	4	54	39	12	1	5	46	3.2	385
105787	labialis	8	Indonesia						6	25	183	2	4	63	25	8	1	5	46	3.1	710
105815	labialis	8	Indonesia	10.15S	123.38E	410		7.0	8	11	181	1	5	48	38	13	1	5	40	3.2	435
105828	labialis	8	Indonesia	9.53S	124.18E	750		7.5	9	5	205	1	4	47	35	12	1	5	nc	nc	686
105847	labialis	8	Indonesia	9.08S	124.39E	10		7.5	8	9	183	1	4	49	36	11	1	5	50	3.3	nc
105870	labialis	8	Indonesia	10.16S	123.33E	150		6.0	6	29	183	0	4	49	35	12	1	5	50	3.1	547
105872	labialis	8	Indonesia	9.41S	120.22E	5		8.0	12	22	182	0	4	62	52	18	1	5	45	3.1	389
105873	labialis	8	Indonesia	9.40S	120.23E	5		8.5	7	32	177	1	4	62	48	19	1	5	50	3.2	506
105876	labialis	8	Indonesia	9.48S	120.37E	5		8.0	6	30	178	0	4	61	44	15	1	5	50	3.3	378
106659	labialis	8	India	10.28N	77.10E	390	700		8	20	163	2	4	50	36	10	1	5	55	3.2	535
107692	labialis	8	Indonesia						5	9	178	0	4	50	36	11	2	5	42	3.2	743
107694	labialis	8	Indonesia						8	15	185	0	4	51	41	10	1	5	42	3.2	409
108336	labialis	8	Indonesia	8.16S	123.01E	40		6.5	8	32	177	0	4	51	40	12	1	5	42	3.0	645
108422	labialis	8	Indonesia	8.45S	120.08E	20		7.5	10	11	175	2	4	50	39	11	1	5	48	3.2	484
108448	labialis	8	Indonesia	8.23S	120.28E	290		7.5	5	10	175	1	4	44	33	10	1	5	46	3.2	475
108455	labialis	8	Indonesia	8.17S	120.29E	5		6.0	10	12	177	1	4	53	39	12	1	5	42	3.1	650
108624	labialis	8	Indonesia	8.37S	116.12E	75		7.0	9	23	176	2	4	52	36	10	1	5	41	3.2	418
108627	labialis	8	Indonesia	8.45S	116.06E	130		6.5	8	29	178	2	4	58	40	13	1	5	41	3.0	377
108630	labialis	8	Indonesia	8.32S	116.16E	5		7.5	7	28	176	2	4	48	38	11	1	5	50	3.0	400

Accession No.	Species	Gp	Origin	Lat.	Long.	Alt. (m)	Rain (mm)	pH	CNH (mm)	CaD (cm)	DFFl	St	FrD	TLfLth (mm)	TLfWth (mm)	TLfPet (mm)	LHDAd	CalTth	PdLth (mm)	PdWth (mm)	SdWt (mg/ 100)
108636	labialis	8	Indonesia	8.30S	116.07E	60		6.0	5	20	178	2	4	48	36	12	1	5	44	3.4	382
108642	labialis	8	Indonesia	8.25S	116.07E	80		7.5	5	13	176	2	4	38	32	8	2	5	43	2.8	424
108647	labialis	8	Indonesia	8.41S	116.17E	70		7.0	7	14	163	1	4	44	34	10	1	5	44	3.0	494
108691	labialis	8	Indonesia	8.25S	117.13E	5		6.5	11	16	174	0	4	44	35	11	1	5	45	3.0	381
108697	labialis	8	Indonesia	8.27S	117.06E	20		8.0	10	7	175	1	4	41	36	10	1	5	32	3.0	804
108698	labialis	8	Indonesia	8.29S	117.02E	20		8.0	6	5	165	0	6	38	33	11	1	5	42	2.8	746
52800	micans	9	Malawi	13.41S	34.10E	1200	1000		5	45	186	4	3	98	78	12	2	4	40	3.6	681
104684	mollis	4	India	23.10N	79.01E	460	1420		7	12	79	0	6	37	27	10	0	4	38	3.8	809
104685	mollis	4	India	23.06N	79.09E	390	1450	6.5	4	7	68	0	4	43	24	6	0	4	35	3.8	936
104781	mollis	4	India	23.08N	79.48E	420	1450		5	17	79	0	6	39	24	5	0	4	38	3.5	873
104792	mollis	4	India	22.59N	80.04E	540	1430		4	15	89	0	4	41	27	8	0	4	42	3.6	872
104823	mollis	4	India	22.28E	80.30E	540	1420	6.5	5	20	102	0	4	53	36	12	0	4	42	3.7	831
104843	mollis	4	India	22.25N	80.18E	490	1430	8.7	4	14	97	0	6	35	24	6	0	4	39	3.6	951
104863	mollis	4	India	22.01N	79.25E				5	7	109	0	4	34	23	8	0	4	34	3.6	863
104942	mollis	4	India	22.43N	76.26E	460	1120		4	6	68	0	4	38	26	8	0	4	39	3.9	878
104965	mollis	4	India	22.34N	75.40E	585	1050		0	5	135	0	5	41	26	8	0	4	42	4.0	1195
104997	mollis	4	India	21.36N	76.18E	355	950		3	4	68	0	4	35	25	8	0	4	41	3.7	886
106395	mollis	4	India	15.39N	74.45E	740	1200		6	14	137	0	4	40	25	7	1	4	38	3.1	551
60372	repens	1	Kenya	4.04S	39.40E	6	1250	8.5	10	15	73	2	6	29	22	7	1	5	31	2.9	518
60375	repens	1	Kenya	3.18S	40.01E	6	1000	9.0	8	18	73	1	6	32	23	7	1	5	29	2.9	404
75961	repens	1	Kenya			30			5	22	73	4	6	50	30	10	2	5	37	3.6	850
75962	repens	1	Kenya						3	15	73	3	6	40	22	8	2	5	29	2.8	651
81653	repens	1	Kenya	3.37S	39.50E	5			2	20	77	4	6	42	29	6	2	5	30	3.0	514
81654	repens	1	Kenya	3.37S	39.50E	5			5	20	73	4	6	52	30	10	1	5	34	3.4	865
25338	repens	2	Kenya	0.31S	34.30E				2	14	110	3	4	34	32	7	1	5	35	2.6	321
25340	repens	2	(Kenya)						2	9	122	1	4	36	28	6	1	5	31	2.4	340
52801	repens	2	Zambia	15.26S	28.20E	1200	775		2	6	109	3	4	26	22	4	1	5	34	2.8	389
67227	repens	2	Uganda	0.27N	33.14E	1200	1300		1	12	114	2	4	37	30	6	1	5	40	2.8	366

Accession No.	Species	Gp	Origin	Lat.	Long.	Alt. (m)	Rain (mm)	pH	CNH (mm)	CaD (cm)	DFFl	St	FrD	TLfLth (mm)	TLfWth (mm)	TLfPet (mm)	LHDAd	CalTth	PdLth (mm)	PdWth (mm)	SdWt (mg/ 100)
77006	repens	2	Zambia	15.39S	28.19E				2	4	168	2	4	25	22	3	1	5	32	2.8	364
52788	uncinatus	3	Zimbabwe	19.25S	32.30E				2	12	143	0	3	92	36	5	2	5	36	3.0	537
114121	uncinatus	3	Ethiopia	8.03N	36.27E	1580	1500	5.0	2	nc	184	0	5	67	19	4	1	5	nc	nc	nc
Q17406	uncinatus	6	(Australia)						28	27	141	0	5	88	29	12	2	5	54	3.0	711
18428	uncinatus	6	Zambia	16.51S	27.04E				25	35	168	1	4	76	42	14	1	5	51	3.2	637
33161	uncinatus	6	Uganda					6.0	25	26	173	1	5	70	24	8	1	5	55	2.9	565
34753	uncinatus	6	Brazil	22.54S	47.06W				20	24	173	0	5	77	39	9	2	5	57	3.0	712
37621	uncinatus	6	Bolivia	18.08S	63.52W	1200			25	27	157	1	5	72	40	7	1	5	51	3.5	592
37705	uncinatus	6	Bolivia			630			23	42	144	1	3	99	42	11	2	5	41	3.0	530
40306	uncinatus	6	Brazil	23.42S	47.27W	850			nc	27	151	0	2	80	47	13	2	5	50	3.4	718
40313	uncinatus	6	Bolivia	17.25S	63.15W	420			30	38	144	1	5	103	49	10	1	5	49	2.9	489
40315	uncinatus	6	Brazil			450			27	35	171	0	3	65	38	10	2	5	48	2.8	470
40316	uncinatus	6	Brazil			450			27	38	169	0	4	70	42	10	1	5	50	3.0	540
40317	uncinatus	6	Brazil	21.46S	42.38W	330			25	42	167	2	5	73	44	12	1	5	42	2.9	651
43791	uncinatus	6	Zambia						28	22	144	1	5	92	25	10	1	5	47	2.6	643
49750	uncinatus	6	Brazil	20.26S	49.53W	350	1175		30	46	172	1	3	83	47	15	2	5	55	3.4	721
50154	uncinatus	6	(Mexico)						22	37	189	1	4	85	36	13	2	5	54	3.0	632
52785	uncinatus	6	Madagascar	18.57S	46.41E	1300	1650		27	21	151	1	5	85	32	9	1	5	48	2.9	493
52787	uncinatus	6	Tanzania	7.22S	37.00E	1000	1200		21	34	178	1	5	82	26	7	1	5	52	2.8	548
52790	uncinatus	6	Madagascar	18.44S	46.02E	775	1650		23	15	144	1	5	86	26	9	1	5	44	2.7	570
52791	uncinatus	6	Zambia						22	20	141	0	5	82	31	13	1	5	49	2.8	633
52803	uncinatus	6	Malawi	13.45S	34.29E	500	1100		15	22	151	1	5	82	30	10	1	5	60	2.9	533
76288	uncinatus	6	Guatemala	14.20N	90.47W	700	1600	7.0	28	22	183	0	3	65	30	8	2	5	49	3.2	667
77005	uncinatus	6	Zambia	15.39S	28.19E				27	24	146	0	5	96	30	12	2	5	55	2.8	604
85873	uncinatus	6	Mexico	16.03N	96.30W	1500	1000	6.5	25	34	182	1	4	79	34	13	1	5	50	3.1	850
86143	uncinatus	6	Mexico	21.20N	104.32W	1000	1000	6.5	25	38	147	1	4	70	35	8	1	5	54	3.1	899
87501	uncinatus	6	Mexico	16.08N	97.11W	1000	2000		28	38	157	1	4	77	37	13	1	5	55	3.0	542
87881	uncinatus	6	Mexico	19.12N	96.43W	650	1000		25	48	164	1	4	92	34	16	1	5	48	3.2	459
89188	uncinatus	6	Mexico	19.20N	104.30W	600			25	37	181	2	4	75	39	11	1	5	52	3.1	528
91129	uncinatus	6	Mexico	18.26N	99.55W	1450	1150	8.0	15	34	157	1	5	77	34	14	1	5	52	2.8	523

Accession No.	Species	Gp	Origin	Lat.	Long.	Alt. (m)	Rain (mm)	pH	CNH (mm)	CaD (cm)	DFFl	St	FrD	TLfLth (mm)	TLfWth (mm)	TLfPet (mm)	LHDAd	CalTth	PdLth (mm)	PdWth (mm)	SdWt (mg/ 100)
91134	uncinatus	6	Mexico	18.27N	99.58W	1450	1150	7.0	25	27	157	2	5	71	32	12	1	5	46	3.0	581
91167	uncinatus	6	Mexico	18.27N	100.00W	1450	1000		25	32	157	1	5	75	32	14	1	5	51	3.0	561
91238	uncinatus	6	Mexico	18.51N	100.10W	1300	1700	7.0	20	33	156	2	4	79	35	17	1	5	56	3.2	578
40310	uncinatus	7	Bolivia			2100			30	40	167	1	5	99	58	13	1	5	60	3.1	540
40312	uncinatus	7	Bolivia	18.08S	63.20W	660			26	42	151	1	4	94	44	8	1	5	53	3.1	612
76287	uncinatus	7	Belize	18.05N	88.35W		1400		30	30	219	2	5	98	45	12	1	5	nc	nc	1140
85840	uncinatus	7	Mexico	16.30N	98.30W	200	1200	7.0	30	40	167	2	4	87	46	16	1	5	53	3.3	1134
114119	uncinatus	7	Ethiopia	11.04N	35.56E	1100	1200		20	28	161	2	5	84	30	8	1	5	60	2.7	622
CQ503	uncinatus	8	(Australia)						25	40	175	1	3	80	44	18	2	5	53	3.0	544
Q10119	uncinatus	8	Peru						25	38	173	1	3	89	42	13	2	5	49	2.5	429
Q10804	uncinatus	8	Guatemala	14.42N	91.50W				22	40	202	1	4	95	50	12	2	5	nc	nc	741
Q24674	uncinatus	8	(Australia)						24	45	174	1	3	81	42	15	2	5	46	2.6	412
Q8344	uncinatus	8	Guatemala						25	50	175	1	3	98	48	20	2	5	42	3.0	368
12370	uncinatus	8	(Guyana)						20	38	191	1	3	75	45	12	1	5	58	2.9	580
21509	uncinatus	8	Costa Rica						20	34	192	1	3	78	44	12	1	5	50	2.8	439
22620	uncinatus	8	(Nigeria)						22	36	192	2	3	74	42	14	1	5	56	3.0	589
24214	uncinatus	8	(Cuba)						25	40	190	1	3	78	45	14	2	5	50	3.0	619
25937	uncinatus	8	(Tanzania)						20	38	169	1	3	73	42	14	1	5	55	3.1	556
27325	uncinatus	8	(Costa Rica)						25	35	199	2	3	73	42	11	2	5	51	2.9	589
32376	uncinatus	8	Costa Rica						15	41	207	2	3	73	48	11	2	5	nc	nc	747
33980	uncinatus	8	Costa Rica	10.26N	85.08W				28	42	190	1	3	93	46	7	2	5	58	3.2	856
33981	uncinatus	8	Costa Rica						25	42	191	2	3	79	47	11	2	5	55	2.9	488
34441	uncinatus	8	Guatemala	14.25N	90.35W				22	38	182	1	3	75	32	11	1	5	48	3.1	522
34593	uncinatus	8	Brazil						18	50	182	1	3	79	39	13	1	5	50	2.8	372
37356	uncinatus	8	Nicaragua	12.06N	86.18W	15			22	44	186	1	3	97	52	13	1	5	52	3.0	504
37648	uncinatus	8	Bolivia	18.08S	63.53W	1210			25	38	151	1	3	76	46	10	1	5	52	3.1	675
38621	uncinatus	8	(Mexico)						20	38	201	1	3	103	43	11	1	5	49	2.7	391
38622	uncinatus	8	(Mexico)						23	45	171	1	3	93	50	14	1	5	nc	nc	nc
39124	uncinatus	8	Brazil	22.45S	47.40W				21	46	182	1	3	96	40	14	1	5	52	2.6	319
40307	uncinatus	8	Bolivia			1200			25	35	158	1	4	94	50	11	1	5	56	3.2	707

Accession No.	Species	Gp	Origin	Lat.	Long.	Alt. (m)	Rain (mm)	pH	CNH (mm)	CaD (cm)	DFFl	St	FrD	TLfLth (mm)	TLfWth (mm)	TLfPet (mm)	LHDAd	CalTth	PdLth (mm)	PdWth (mm)	SdWt (mg/ 100)
40308	uncinatus	8	(Brazil)						17	52	182	1	3	76	34	13	1	5	48	2.5	383
40311	uncinatus	8	Bolivia	18.06S	63.40W			6.2	23	30	159	1	5	92	54	11	1	5	53	3.2	634
40314	uncinatus	8	Brazil			600			25	40	151	0	4	89	46	15	1	5	48	2.8	410
46382	uncinatus	8	(Cuba)						20	38	144	0	4	97	42	15	1	5	65	3.2	680
49845	uncinatus	8	Brazil	18.51S	41.57W	350	1150		25	38	168	1	3	82	43	9	1	5	54	3.0	538
49846	uncinatus	8	(Brazil)						26	47	184	1	3	89	36	16	2	5	51	2.8	454
54837	uncinatus	8	(Brazil)						20	50	173	1	3	77	46	16	2	5	53	2.8	353
68899	uncinatus	8	(Brazil)						35	40	189	1	3	90	49	11	1	5	62	3.2	665
75180	uncinatus	8	Colombia	4.16N	73.33W	1200	700		23	40	170	2	3	78	39	6	3	5	44	2.8	307
76286	uncinatus	8	Belize	17.11N	89.00W	60	1400		27	50	191	2	4	77	52	14	2	5	46	2.7	665
81393	uncinatus	8	Colombia	4.00N	76.17W	1600	1500		25	50	161	2	4	97	40	10	2	5	49	2.8	401
82318	uncinatus	8	Cuba	20.19N	75.49W	250	1200	7.5	30	45	179	1	3	101	51	15	1	5	59	3.2	597
82330	uncinatus	8	Brazil	16.45S	43.52W		850		25	24	187	1	3	80	44	12	1	5	54	3.1	718
85865	uncinatus	8	Mexico	15.43N	96.29W	300	1600	6.5	22	37	200	1	2	81	36	16	1	5	44	3.2	719
86177	uncinatus	8	Mexico	19.17N	104.40W	40	1000	6.5	32	47	155	1	3	90	43	14	2	5	50	3.0	583
87544	uncinatus	8	Mexico	18.28N	95.26W	200	2200	6.5	20	48	219	1	3	97	54	11	1	5	39	2.9	708
87551	uncinatus	8	Mexico	18.20N	95.55W	96	1400	6.0	25	50	183	1	3	103	49	15	1	5	46	3.0	691
87805	uncinatus	8	Mexico	18.31N	95.10W	300	2300	6.0	21	55	207	1	3	90	46	15	1	5	40	3.2	460
87851	uncinatus	8	Mexico	16.51N	93.30W	1000	1000		22	50	215	1	3	88	47	16	2	5	45	3.1	675
92629	uncinatus	8	Colombia	3.50N	76.30W	1575	160	5.5	30	40	183	1	3	96	43	14	2	5	50	2.7	600
114131	uncinatus	8	Ethiopia	6.17N	36.52E	1420	1700	7.0	15	38	176	2	5	82	33	8	1	5	48	2.9	466
32964	volubilis	5	(Colombia)						1	3	173	1	4	27	11	5	0	4	nc	nc	283
35688	volubilis	5	(Trinidad)						2	8	122	2	4	39	19	6	0	4	32	2.0	204
38301	volubilis	5	Venezuela			450			3	4	186	1	4	43	18	8	0	4	26	2.2	243
41017	volubilis	5	Fiji						3	4	122	0	4	40	18	6	0	4	31	2.1	194
51385	volubilis	5	Venezuela						2	4	185	1	4	37	18	8	0	4	36	2.2	261
58730	volubilis	5	Colombia	8.45N	75.54W	28	1200		4	12	108	2	4	44	18	9	0	4	27	2.2	190
58733	volubilis	5	Colombia	10.22N	73.10W	230	600		5	5	173	2	4	38	20	6	1	4	26	2.2	212
58734	volubilis	5	Venezula			200	1100		5	5	117	2	4	46	20	11	0	4	33	2.5	259
61187	volubilis	5	Venezula						2	4	114	0	5	36	14	8	0	4	32	2.8	295
76290	volubilis	5	Belize	17.11N	89.00W	60	1400		2	4	119	2	4	46	24	7	0	4	28	2.2	190

Accession No.	Species	Gp	Origin	Lat.	Long.	Alt. (m)	Rain (mm)	pH	CNH (mm)	CaD (cm)	DFFl	St	FrD	TLfLth (mm)	TLfWth (mm)	TLfPet (mm)	LHDAd	CalTth	PdLth (mm)	PdWth (mm)	SdWt (mg/ 100)
79677	volubilis	5	Cuba	20.14N	76.07W	250	1200	7.0	3	9	94	4	4	56	18	8	0	4	33	2.0	228
82317	volubilis	5	Cuba	20.25N	75.32W	250	1200	7.0	2	4	94	2	4	45	22	6	0	4	33	2.1	224
82324	volubilis	5	Cuba	20.21N	76.28W	75	1200		3	10	94	3	4	54	28	8	0	4	37	2.2	228
91980	volubilis	5	Cuba						3	6	119	1	4	48	20	10	0	4	34	2.7	265

[1] nc denotes data not collected.