

CONTRIBUTIONS TO THE DICOTYLEDONOUS PLANTS OF TAIWAN(VII)

Yeh-Ching Liu* Chern-hsiung Ou**

(Abstract) Described as new taxa in Taiwan are two species, two new varieties, three new records and new naturalized species. Besides, the existence of one noteworthy and controversial species has been confirmed.

台灣雙子葉植物新見(七)

劉業經* 歐辰雄**

本文繼台灣雙子植物新見(六)之後，乃著者研究本省地區雙子葉植物分類成果報告之一，記敘

本文繼台灣雙子植物新見(六)之後，乃著者研究本省地區雙子葉植物分類成果報告之一，記敘有二新種，二新變種，四新紀錄種，一新馴化種及一新確認種。文中乃以傳統分類方法將此等植物予以分類與鑑定，並依國際植物命名法規之規定，對新種予以命名及拉丁文與英文之記述，同時指定模式標本予以存證，對新紀錄種，新馴化種及爭議確認種亦分別予以詳細記述與引證標本。彼等之學名及中名分別如次：

(一)新種及新變種：

1. 霧社山薔薇 *Rosa sambusiana* var. *Wushaniana* Y.C. Liu & C.H. Ou
2. 臺灣血藤 *Mucuna taiwaniana* Y.C. Liu & C.H. Ou sp. nov.
3. 臺南毛西番蓮 *Passiflora foetida* var. *tainaniana* Y.C. Liu & C.H. Ou var. nov.
4. 鹿谷秋海棠 *Begonia lukuana* Y.C. Liu & C.H. Ou sp. nov.

(二)新紀錄種：

1. 大葉苘 *Abutilon grandifolium* (Willd.) Sweet
2. 毛苘 *Abutilon hirtum* (Lamk.) Sweet.
3. 短柄爪哇午時花 *Sida javensis* Cav. ssp. *expilosa* Bross.
4. 翼柄燈草 *Nicotiana alata* Link & Otto

(三)新馴化種：

1. 紫花山螞蝗 *Desmodium tortuosum* (Swartz.) DC

(四)確認爭議種：

1. 海蚌含珠 *Acalypha indica* Linn.

上述均為臺灣過去文獻中所無，是本文對植物分類學上之新知與新見。

*Professor, Department of Forestry, National Chung Hsing University.

**Associate Professor, Department of Forestry, National Chung Hsing University.

In this paper, the writer propose several new taxal new taxa to the dicotyledonous plants of Taiwan. Described as new taxa are two new species, two new varieties, three new records, and one new naturalized species. Besides, the existence of one noteworthy and doubtful controversial species has been confirmed. These taxa are listed as follows:

(A) New species and new varieties:

- (a) Rosa sambusiana var. wushaniana Y.C. Liu & C.H.Ou
- (b) Mucuna taiwaniana Y.C. Liu & C.H. Ou
- (c) Passiflora foetida var. tainaniana Y.C. Liu & C.H. Ou
- (d) Begonia lukuana Y.C. Liu & C.H. Ou

(B) New Records:

- (a) Abutilon grandifolium (Willd.) Sweet
- (b) Abutilon hirtum (Lamk.) Sweet
- (c) Sida javensis Cav. ssp. expilosa Bross.
- (d) Nicotiana alata Link & Otto

(C) New naturalized species:

- (a) Desmodium tortuosum (Swartz.) DC.

(D) Confirmation of doubtful species:

- (a) Acalypha indica Linn.

These taxa are arranged according to Dr. J. Hutchinson's taxonomic system (1973). Photographs as well as detailed descriptions for each are given, most of the specimens cited in this paper have been collected by the writer himself and Professor F.Y. Lu during the past several years. Besides nearly all the herbarium collection concerned deposited in Taiwan were carefully examined. The herbaria consulted and abbreviations used in citing their collections are as follows:

(TAI)Herbarium of Department of Botany, National Taiwan University.

(TAIF).....Herbarium of Department of Forestry, National Taiwan University.

(TFRI).....Herbarium of Taiwan Forest Research Institute.

(NCUF).....Herbarium of Department of Forestry, National Chung-Hsing University.

(NPJA).....Herbarium of National Pingtung Insitute of Agriculture.

(NCIA).....Herbarium of National Chiayi Institute of Agriculture.

The writer would like to express his sincere thanks to the curators and superintendents of those herbaria for their gracious help. Deeply obliged is the writer to Professor F.Y. Lu and Mr. K.C. Lu for their generous help and encouragement.

- Rosaceae -

Rosa sambusiana var. *wushaniana* Y.C. Liu & C.H. Ou var. nov. Photo. 1

Frutex scandentissimus, rami plus minus flexuosi, glabri, remote brevis validis aculeari. Folia saepe 7-foliolata, raro 5. chartaceo-membracea supra nitida glabra subtus subglabra, 4-11 cm longa, petiolis 1-2 cm longis, aculeati, foliolo terminali elliptico-ovato 2.5-4.5 cm longo, 1.2-2 cm lato apice acuminato ad obtusissimo basi obtusissimorotundato, margine regulariter serrulato, prope basi sub-integro. Stipulis linearibus cum petiolo latere interiore usque ad circa 8 mm connatis, partibus liberis subulatis, circa 2 mm longis, margine glandulosis.

Corymbi-cymae ad ramulos terminales, rhachibus quam pedicillo dense rubro-glandulosis. Calycis tubus oblongo-cylindricus circa 5 mm longus dense rubo-glandulosus quam hirsutus, calycis lobis ovato-lanceolatis lacinia apice caudatis extus dense glandulosis-hirsutiei intus dense villosis. Petala 5 alba. stylo columnoformi dense hirsuto. Fructus globosus circa 8 mm in diametro.

Hab. Wusha. Nantou Hsien alt. 1500 M.

Leg. C.H. Ou 2488 (May 26, 1974, Holotype in NCUF)

A climbing shrub. stems somewhat zigzag, glabrous, scattered with short stout prickles. Leaves mostly 7-foliolate, rarely 5, ellipticovate, 1.5-4.5 cm long, 0.8-2 cm wide, apex acute or shortly acuminate, base obtuse, the terminal leaflets larger, nearly glabrous on both sides, irregularly serrate, rachis sparsely prickles; stipules membranaceous, upper parts free from the petioles, linear, entire, glandular.

Inflorescences in terminal corymb-cymes. Peduncles, pedicels and hypanthus, all densely red-glandular, sepals ovate-lanceolata, apex caudate, laciniate, densely glandular-hairy and tomentose outside, tomentose inside; petals white; styles connate into a single column, exserted, pillose. Fruit globose, about 8 mm across.

Endemic, found only in mountain area of Wusha.

Specimens examined:

Nantou Hsien C.H. Ou 2488 Wusha; T.Y. Chen, s.n. Wusha; S.C. Liu, s.n. Wusha.

Not: this variety is characterized by smaller 7-foliolate, densely red glandular-hairy inflorescence.

Desmodium tortuosum (Swartz.) DC, Prod. 2:332, 1825

Photo. 2

Desmodium purpurulum (Mill.) Fawc. & Rendle, Fl. Jamaica 4:36, 1920

Perennial suffrutescent herbs, up to 1 M high with woody base, stems erect, branched, rather slender, densely hispid. Leaves trifoliolate, terminal leaflets lanceolate or rhombic-lanceolate, 2.5-13 cm long, 1.5-7 cm wide, apex obtuse or rounded and apiculate, base cuneate-obtuse, or cuneate-rounded, sparsely pubescent on both surfaces, margins entire, rather densely long-hairy; petioles 1.5-7 cm long, densely hispid; stipules large, triangular, about 1 cm long, 17 mm wide, amplexicaul. Inflorescences axillary and terminal racemes, often combined into a not flat panicle; bracts fugacious. Flowers blue, 3-4 mm long; pedicels 10-15 mm long; pubescent; calyx about 1.5 mm long, upper segments connate more than halfway up; pubescent and glandular-dots without, glabrous within. Corolla glabrous, the standard 4-5 mm long, at the base with 2 pale blotches, greenish on the outside. Pods 5-6 jointed, 8-30 mm long, both sutures deeply indented, joints orbicular, about 3 mm across.

Native in tropical and subtropical America, Taiwan, introduced and naturalized.

Specimens examined:

Taichung Hsien: C.H. Ou 6954, Taiping (NCUF)

Taipei City: Hosokawa 060288, C.C. Huang & M.T. Kao 060288 (TAI)

Note: A distinct species which is characterized by having amplexicaul stipules blue flowers and orbicular joints.

Mucuna taiwaniana Y.C. Liu & C.H. Ou sp. nov

Photo. 3

Scandens, ramusculus fulva-tomentosus posterius glabratus. Folia 3-foliolata foliolo terminali ovato-oblongo 8-12 cm longo apice acuto ad summum mucronato basi cuneato, subtrinerivi vel pinniveo, supra glabro or subglabro subtus fulvo-tomentos, margine integro chartaceo vel chartaceo-membranaceo,

petiolo 6-14 cm longo, foliolis lateralibus oblique ad basi 7-11 cm longis 4.5-6 cm latis. Stipulis subulatis 2-4 mm longis caducis. Racemi ad ramos defoliatos lateraliter siti penduli, 8-15 cm longis. Calyx late campanulatus ore 5-dentato, antico longissimo 12-15 cm longo. Petala purpura, Vexillum orbiculais 4 cm latum purpro-fuscatum, margine ne ciliatum. Ovarium dense pilosum quam fulvo-tomentum circa 3-4.5 cm longum, stylo filiformi basi hirsuto apice glabro.

Hab.: Shouka, Pingtung Hsien

Leg.: C.H. Ou et al 2453 (April 5, 1974 Holotype in NCUF)

A large woody climber, the young branchlets pale brown hirsute, then glabrescent. Leaflets 3, petioles 6-14 cm long, terminal leaflet ovate-oblong, 8-12 cm long, apex acute, mucronate at summit, base cuneate, petiolule 5-7 mm long, glabrous or glabrescent above, pale brown hirsute beneath, reticulate veins distinct, lateral leaflets oblique at base, 7-11 cm long, 4.5-6 cm wide, stipule subulate, 2-4 mm long caducous. Inflorescence long-peduncled pendulous raceme, 8-15 cm long, calyx broadly campanulate the lower segment longer, 12-15 cm long, corolla purple, standards dark purple, orbicular, glabrous along the margins, about 2 cm long. Ovary densely pillose, yellowish brown, hairs about 3-4.5 mm long. Styles villose, but upper part glabrous.

Endemic, known only from the southern part of the island.

Specimen examined:

Pingtong Hsien: C.H. Ou 2453 Shouka (NCUF)

Note: A species bears some resemblance to Mucuna ferruginea Matsum.

But it can easily be distinguished by its purple standards without cilia and pillose styles.

- Passifloraceae -

Passiflora foetida var. Tainaniana Y.C. Liu & C.H. Ou var. nov. Photo. 4

Herba volubilis validiuscula, cirrhis axillari bus dense fuscentes, pilosis
Folia lati-ovata 4-8 cm longa 3-6 cm lata apice acuta ad acumiminta.
basi cordata supra patente pilosa subtus appresse pilosa tenuiter 3-loba,
margine irregularis-repanda pilosa et viscida. Florati solitari, axillares,
subtenti cum a prominentis glandulosa bractea, sepala 5, petala 5 oblonga

alba coronae circa 1 cm longae, albae, ovarium albivillosum. Bacca ovato-orbicularis sparse pilosa velum partim cum involucre rubescenti circa 2.5 cm in diametro.

Hab.: Shinhwa, Tainan Hsien; Santiman and Olanpi, Pintong Hsien.

Leg.: F.Y. Lu & C.H. Ou 402 (Feb. 7, 1971, Holtype in (NCUF)

Climbing vines, tendrils axillary, densely covered with brown patent pilose. Leaves broadly ovate, 4-8 cm long, 3-6 cm wide, apex acute to acuminate, base cordate, the upper surfaces patent pilose, the lower surfaces appressed pilose, shallowly 3-lobed, the margins irregular-repand, pilose and viscid glandular. Flowers solitary, axillary, surrounded by 3 prominent pinnatisect glandular bracts; sepals 5, petals 5, oblong, white; coronal threads about 1 cm long, pure white; ovary white-villose. Berries ovate-orbicular, sparsely pilose, veiled partially by involucre, orange, about 2.5 cm across.

Endemic, especially in southern parts of the island at low altitudes.

Specimens examined:

Tainan Hsien: C.H. Ou et al 2988A Hsinhwa.

Pingtong Hsien: F.Y. Lu & C.H. Ou 402 Santiman; Olanpi 6364.

Note: A distinct species which is characterized by having pure white corona, pilose ovary, larger berry which veiled partially in volucre.

- Begoniaceae -

Begonia lukuana Y.C. Liu & C.H. Ou sp. nov.

Photo. 5

Caulis validiusculus 70 cm altus succulentus ramosus glaber. Folia loge petiolata oblique oblonga 12-18 cm longa 6-7 cm lata apice acuminata basi valde oblique cordata; margine prope integra vel irregulariter repandamina-crenata, utrinque glabra supra dense alba-punctata subtus lilacina-rubida, petiolis 6-10 cm longis, stiplolis lanceolatis 7 mm longis. Cymae axillares paucifloratae pedunculis circa 4 mm longis. Staminata floreo alba perianthii segmenta 4 2-exteriora majora latissime ovata, 8 mm longa, 7 mm lata, 2-interiora minora, oblonga, 8 mm longa, 4 mm lata. Stamina numerosa, filamentis circa 1.5 mm longis, antheris linearis, circa 2 mm longis. Pistillata floreo alba, perianthii segmenta 4, Ovarium inferium, 3-loculare, stylo 3, apice bifido. Fructus capsularis, 14 mm longus. inaequaliter

trigonus, inaequaliter triangularis, alis 2-anterioribus angustatis, 4 mm longis, 1-posterior latiore 7 mm longis.

Hab: Luku, Nantou Hsien

Leg. C.H. Ou 2170 (Oct. 21 1971 Holotype in NCUF)

A succulent herb; stems branched, about 70 cm high, glabrous. Leaves obliquely oblong in outline, 12-18 cm long, 6-7 cm wide, apex acuminate, base obliquely cordate, margins nearly entire or irregularly repand-minute-crenate, glabrous on both surfaces, densely white-dotted above, purple-red beneath; petioles about 6-10 cm long; stipules lanceolate 7 mm long, caducous. Flowers, in axillary cymes, 3-4-flowered, peduncles about 4 cm long, staminate flowers white, perianth-segments 4, the two outer ones larger, broadly ovate, 8 mm long, 7 mm wide, the two inner ones smaller, oblong, 8 mm long, 4 mm wide, the stamens numerous, the filaments about 1.5 mm long, the anthers linear, about 2 mm long. Pistillate flowers white, perianthsegments 4, ovary inferior, 3-celled, styles 3, bifid at apex, Fruit a capsul, ovate, with 3 wings, short and subequal.

Endemis. woodland undergrowths at an altitude of about 1000m.

Specimens examined:

Nantou Hsien: C.H. Ou 2170 Luku.

Note: The present new species much resembles to Begonia hayatae Gagn., but differs from it in having short 3 winged capsules and purple-red leaves beneath. It is also very near to Begonia taiwaniana Hay., at first appearance, yet, it differs from the latter distinctly in having shorter peduncles, larger stipules, white-spotty leaves above as well as short-winged capsules.

- Malvaceae -

Abutilon grandifolium (Willd.) Sweet, Hort. Brit. Ed. 1, 53, 1826 Photo.6

Sida grandifolia Willd., En. Hort. Berol. 2:724, 1809

Sida mollis Ortega, Hook., in Curtis, Bot. Mag. 54: t. 2759, 1827

Abutilon mollissimum (Cav.) Sweet var. sandcoicene Hochr. in Ann. Cons & Jard. Gen. 158162239, 1912; Degene, Fl. Haw. fam. 221 c.tab. 1938

Shrub or small trees, up to 2 m high, tomentose, stems densely patently pilose; stipules (only on young brachlets) narrowly linear-subulate, not auriculate. Leaves alternate, ovate-orbicular, 8-18 cm long, 7-15 cm wide,

apex acuminate, base deeply cordata with lobes usually overlapping, softly tomentulose on both sides, green above, pale beneath, margins irregularly dentate; petioles 5-16 cm long, light green, coarsely pubescent like stems; stipules narrowly linear-subulate, about 1 cm long, softly tomentulose, caducous. Flowers axillary, not in racemes or panicles, flower stalks mostly bearing 2-3 crowded short-pedicelled flowers; calyx almost 5-partite, softly tomentulose, about 15 mm long, persisting slightly enlarging and reflexed in fruit; corolla cup-shaped, yellow or orange-yellow, petals cuneate-obovate, about 15-20 mm long and almost as wide, with upper margin irregularly undulate-dentate. Staminal tube glabrous, bearing numerous spreading free glabrous filaments. Pistills rounded, hairy; styles free almost to base, glabrous, about 10 mm long; stigmas dark reddish-purple, carpels about 10, on about 5 cm long jointed peduncle, erect, stiff-papery, somewhat inflated, dull black without with exposed part covered with greenish-yellow spreading pubescence, shiny black within, 10 mm long, 7 mm wide, 4 mm thick, beaked. Seeds about 3-6 per carpel, dull, dark gray to blackish, obliquely reniform, 2-3 mm long, sparsely pubescent.

A native of Peru, but now pantropic in cultivation and often spontaneous in waste places. Introduced and running wild in Taiwan.

Specimens examined:

Taipei Hsien: C.L. Lin 074191-2, 074208-9 (TAI)

Nantou Hsien: C.H. Ou 6940A (NCUF)

Note: This species is near to Abutilon indicum L., but differs from it in having hairy staminal tube, reflexed calyx and 10-carpellate schizocarps.

Abutilon hirtum (Lamk.) Sweet, Hort. Brit ed 1:53, 1826; Merr. in

Philip. Journ. Sci. 5 (Bot.):197, 1910; Enum. Philip. Fl. 3:32,

1923; Backer & Bakj. f., Fl. Jav. 1:424, 1963

Photo.7

Sida Hirta Lamk, Encycl. 1:7, 1783

Stout, annual undershrub, 0.5-2.5 m high, usually somewhat viscid; stems, petioles and pedicels densely set with minute stellate hairs, long patent simple hairs, and short gland-hairs. Leaves orbicular to broadly ovate, base cordate, apex acute or slightly acuminate, 1.5-9 cm long, 1-8 cm wide, 5-9-nerved from base, densely stellate-hairy on both surfaces; margins coarsely or minutely crenate to dentate, or almost entire; petioles 1.5-16

cm long; stipules linear to lanceolate, often falcate, acute, 5-10 mm long. Flowers axillary, solitary, usually accompanied by a bud, after flowering producing a side-branch; pedicels mostly shorter than the petioles, 1.5-3.5 cm long, accrescent to about 4.5 cm long, jointed at 1/3-1/2 below the apex; calyx campanulate, 7-9 mm high, 15-20 mm wide, somewhat inflated, slightly accrescent, 5-fid to 5-parted; segments ovate, acuminate, 5-7 high, 3-4 wide. Calyx intensely stellate-hairy, outside, densely stellate-tomentose inside. Corolla yellow, petals broadly obovate, at apex rounded, often emarginate, spreading finally reflexed. Staminal tube 7-9 mm long. the basal part conical and slightly stellate-hairy, the apical part tubular glabrous. Ovary about 3 mm wide, stellate-hairy, styles connate half-way up. Schizocarp globular, indented at apex, 17-19 mm wide, mericarps 20-25, apex usually shortly acuminate, or rounded or truncate, 10-12 mm high, radially 7-9 mm, dorsally stellate-tomentose. Seed 3 per mericarp. reniform, about 2.5 mm across, punctate by minute stellate hairs at the hilum longer stellate-hairy.

Native in tropical regions of the Old World, Taiwan probably introduced and naturalized as a weed.

Specimens examined:

Changhwa Hsien: C.H. Ou 6880 Chichou (NCUF)

Sida javensis Cav. ssp. expilosa Brossum in Blumea 14(1) 185, 1966 Photo.8

Sida pilosa Cav., Diss. 1:9, t.1, f.2, 1785, non Mill.

Prostrate herb, branched at base, with stems rooting at the nodes. Stem, petioles and pedicels densely set with minute stellate hairs and patent simple hairs. Leaves orbicular in outline, base cordate, apex rounded or obtuse, rarely acute, 1.5-6 cm across, palminerved. at base 5-9nerved; margins crenate to serrate; petioles 2-6 cm long; stipules linear to lanceolate, 1.5-2 mm long. Flowers axillary, usually solitary, sometimes by the development of an accessory bud, in fewflowered short axillary racemes; pedicels 7-15 mm long, jointed at 1/3 from apex. Calyx widely campanulate, about 4 mm across, 5-fid; segments triangular, acuminate. Corolla yellow, petals obovate, often emarginate, glabrous or ciliate at base. Staminal tube hairy. Mericarps 5, tetrahedral with rounded angles, with 2 awns, dorsally and on the awns shorthairy. Seeds pbpof. 2-2.5 mm long, at the hilum short hairy, brown-black.

Widely distributed in tropical Asia and America. In Taiwan, it is found

in thickets of Hungchun peninsula only.

Specimens examined:

Pintong Hsien: Suzuki, T, 074531, 074533, 117182; Shinizu, T, 12189 (all in TAI); F.Y. Lu & C.H. Ou 4075(NCUF)

Note: A distinct subspecies, characterized by the leaves never lobed, at apex rounded, pedicle shorter upto 15 mm long. stems, petioles and pedicels densely set with minute stellate hairs and patent simple hairs.

- Euphorbiaceae -

Acalypha indica Linn., Sp. Pl. 1003, 1753

Photo. 9

Annual herbs, up to 50 cm high or rarely higher, little-branched, short-pubescent at least near apex. Leaves thin, broadly ovate or rhombic-ovate, 2-7 cm long, 1.5-5 cm wide, apex obtuse or rounded, base broadly acuminate or subtruncate, 5-nerved, glabrescent on both side; margins crenate-serrate; petioles slender, often longer than the blade, 1.5-8 cm long. Inflorescences axillary or rarely terminal, slender spikes, erect, 1.7 cm long, solitary or in pairs, the subtending bracts suborbicular, 6-12 mm long, dentate, conduplicate, nonglandular, ciliate. Flowers minute, sepals of pistillate folwers ovate, acute, ciliate, ovary densely pilose, 3-or 4-loculed, the style 3 mm long, lacinulate. Capsules quite concealed by the bracts, about 2 mm long, often only 1-seeded, short-pilose. Seeds ovoid, acute, smooth.

Native in India, Burma, Ceylon, Philippines and westwards to Tropical Africa. Taiwan, introduced and naturalized.

Specimens examined:

Fintong Hsien: F.Y. Lu & C.H. Ou 4058, Chialoshui (NCUF)

Chiayi Hsien: C.H. Ou s.n. Chiayi (NCUF)

Note: This species was firstly reported in Taiwan by Augustin Henry in 1895, yet in 1978, it was overlooked and had not been treated in the "Flora of Taiwan (Vol. III)" Basing on the collection cited above, the auther hereby confirms the present of this weed in Taiwan.

- Solanaceae -

Nicotiana alata Link & Otto, Pl. Rar. 1:63, 1828

Photo.10

Annual or perennial herb, viscid, stems erect, slender, 0.3-1 m high, branching. Leaves sessile, subamplexicaul, blades oblong-spatulate to ovate-elliptic, 10-30 cm long, 5-10 cm wide, apex obtuse, or acute to nearly acuminate, base auriculate or decurrent; margins entire or distantly repandentate. Inflorescence racemose or panicle-like. Calyx hirsute and viscid, tubular with 5 subulate teeth, about 1 cm high. Corolla white, glandular-hairy, tube slender, about 4.5 cm long, yellowish green, throat swollen, limbs about 3 cm across, greenish violet beneath, white within, lobes ovate, acute; stamens unequal, not exserted, anther purple, styles included, stigma capitate, somewhat bifid. ovary 2-celled, glabrous, disk ring-like thickened. Capsules oblong, shorter than the calyx.

Native in Brazil, Uruguay and Paraguay, Recently found at Hwei Sun Forest Station

Specimens examined:

Taipei Hsien: H.S. Huang, 166862, -3, -5 (TAT as N. trigonophylla)

Nantou Hsien: C.H. Ou 6953 (NCUF)

Note: Similar to Nicotiana tabacum L. but differs from it by having white corolla and limbs deeply cut into ovate lobes.

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Photo.1 *Rosa sambusian* var. *Wushaniana*

Y.C. Liu & C.H.Ou



Photo.2 *Desmodium tortuosum*(Swartz.)DC



Photo.3 *Mucuna taiwaniana* Y.C. Liu

& C.H.Ou



Photo.4 *Passiflora foetida* var.

taiwaniana Y.C. Liu & C.H.Ou

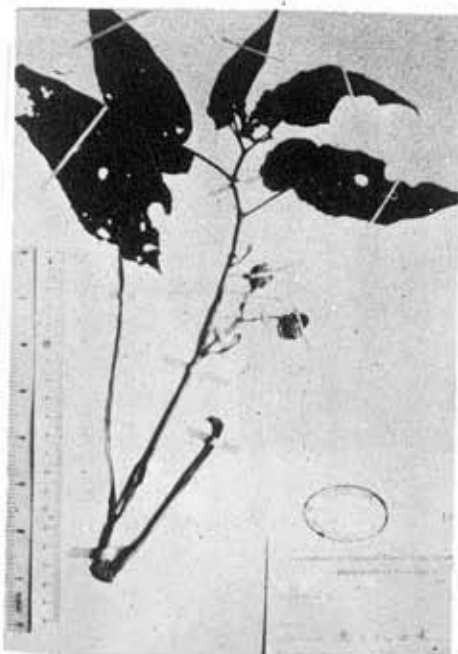


Photo.5 *Begonia lukuana* Y.C. Liu
& C.H.Ou

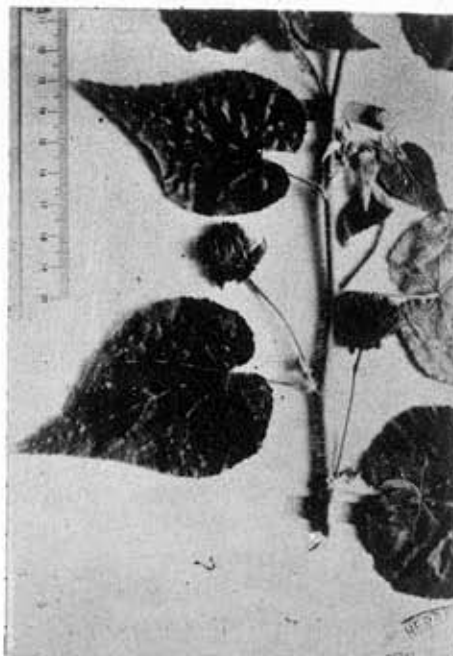


Photo.6 *Abuyilon grandiflorum* (Willd.
Sweet



Photo.7 *Abutilon hirtum*(Lamk.) Sweet

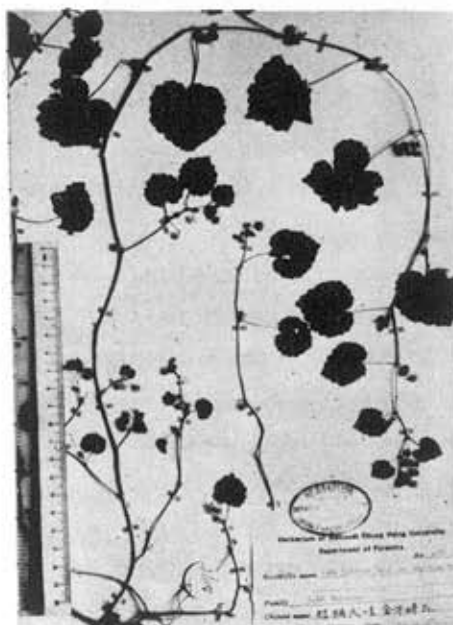


Photo.8 *Sida javensis* Cav. ssp.
expilosa Bross.

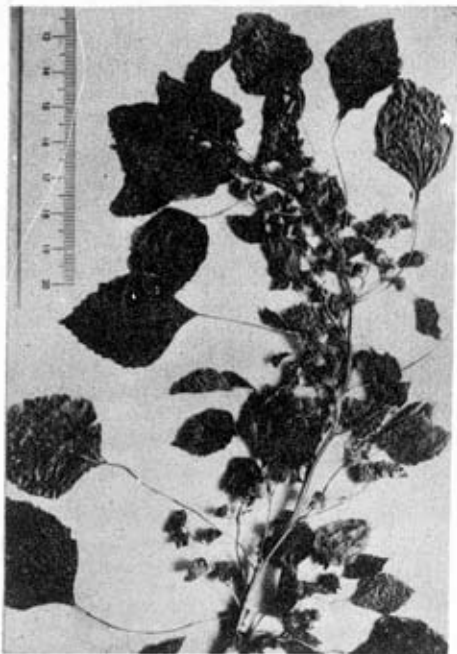


Photo.9 *Acalypha indica* Linn.



Photo.10 *Nicotiana alata* Link & Otto