

K. ITO*: On the Japanese Agrimonies

伊藤浩司：日本産キンミズヒキ類

According to the opinion of KOIDZUMI (1930), the Common Japanese Agrimony, Kinmizuhiki, and the Slender Japanese Agrimony, Hime-Kinmizuhiki, which is distinguishable from the former by lyrato-pinnate leaves and less hairy obovate leaflets without glandular dots beneath, occur in Japan. They are *Agrimonia japonica* (MIQ.) KOIDZ. and *A. nipponica* KOIDZ. respectively. NAKAI (1930) considered the Common Japanese Agrimony as a variety of *A. pilosa* LEDEB., not of *A. viscidula* BGE. as MIQUEL¹⁾ (1867) did or of *A. Europaea* L. as MAKINO²⁾ (1896) did; and published a new combination, *A. pilosa* var. *japonica* (MIQ.) NAKAI. In 1933, he classified Agrimonies of Japan in connection with Korean ones, but did not touch upon *A. nipponica* KOIDZ. at all. At that time he held his previous consideration of Japanese agrimonies and moreover described two forms under the variety, namely f. *bracteata* NAKAI and f. *subglabra* (CARDOT) NAKAI in Japan.

The classification of JUZEPCZUK (1941) was essentially the same as KOIDZUMI's as far as the Japanese Agrimonies.

SHIMIZU³⁾ (1958) published *A. pilosa* var. *simplex* T. SHIMIZU from the limestone region in Pref. Iwate and also I (1961) *A. tokatiensis* Ko. ITO. from Prov. Tokachi in Hokkaido.

From Mt. Diamond in Korea, NAKAI (1918 & 1932) published *A. coreana* NAKAI as a new species. After then KITAGAWA⁴⁾ (1939) recognized its occurrence in Manchuria and he (1958) considered *A. velutina* JUZ., which was described from Vladivostok, as a synonym to *A. coreana* NAKAI. More recently, he (*in litt.*) expressed me the occurrence of the Korean Agrimony in Japan also. At the same time, he suggested me *A. tokatiensis* Ko. ITO may be the same as *A. coreana* NAKAI. As I could get a copy of the original latin description of the Korean Agrimony by courtesy of Dr. KITAGAWA, I re-examined *A. tokatiensis*. As a result, I reached the conclusion that *A. tokatiensis* Ko. ITO may be the same as *A. coreana* NAKAI, as

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1) MIQUEL, F. A. G. : Ann. Mus. Bot. Lugd.-Batav. 3 : 38. (1867)

2) MAKINO, T. : Bot. Mag. Tokyo 10 : 60. (1896)

3) SHIMIZU, T. : Acta Phytotax. Geobot. 17 : 87. (1958)

4) KITAGAWA, M. : Linn. Fl. Mansh. 257. (1939)

Dr. KITAGAWA's suggestion.

Now, members of the Japanese Agrimony are such three taxa as *A. pilosa* var. *japnoica* NAKAI, *A. nipponica* KOIDZ. and *A. coreana* NAKAI, I think.

Key to the Japanese Agimones

- A. Stem coarse. Leaves pinnate, 3-5 pairs. Leaflets narrowly rhombic to rhombic-lanceolate, long-acuminate or acuminate, usually villose, rarely subglabrous and densely glandular-dotted beneath. Stamens about 12-15.

.....1. *A. pilosa* var. *japonica* NAKAI

- A. Stem slender. Leaves lyrato-pinnate, 1-2 pairs. Leaflets obovate to obovate-elliptic, not long-acuminate, scarcely glandular-dotted or not beneath. Stamens few, 5-8, or many, over 15 if not few.
- B. Flowers small, 4-8 mm. across. Stamens few. Leaflets stiffly pilose mainly on the nerves, not villose beneath. Hypanthium glabrous at the base of the bristles. Usually radical rosette-like leaves present at flowering time.

.....2. *A. nipponica* KOIDZ.

- B. Flowers large, 10-16 mm. across. Stamens many. Leaflets densely villose beneath. Hypanthium pubescent at the base of the bristles. Radical rosette-like leaves absent.

.....3. *A. coreana* NAKAI

1. *Agrimonia pilosa* LEDEB. Ind. Hort. Dorp. Suppl. 1. (1823); OHWI Fl. Jap. 650. (1953) excl. f. *nipponica*, pro parte.

var. *japonica* NAKAI Veget. Mt. Apoi 54. (1930) comb. nud. et Bot. Mag. Tokyo 47 : 275. (1933) cum f. *bracteata* et *subglabra*.

The Common Japanese Agrimony is characterized by the coarse and hairy stem with two kinds of divergent hairs, one is long and another is short, long-acuminate leaflets on whose margins the numbers of serrate are 7-11 (usually 8-9) in each side (NAKAI, 1933; JUZEPCZUK, 1941). In spite of various views on taxonomical rank of this Agrimony (MIQUEL, 1867; MAKINO, 1896; KOIDZUMI 1913¹⁾ & 1930; NAKAI, 1930 & 1933; OHWI, 1953) I think that it would be proper to treat the Common Japanese Agrimony as a variety of *A. pilosa* LEDEB.

On the color of the glandular-dots distributed over the under-surface of the leaflets, KOIDZUMI (1930) wrote on his clavis "Folia.....subtus aureoglandulosa;....." in regard to *A. japonica* and "Folia.....subtus laxissime argenteo-glandulifera....." in regard to *A. pilosa*. As far as I examined, the Common Japanese Agrimony has usually argenteo-glandular dots, but rarely tintured with yellowish color, while *A. pilosa* has yellowish-yellow glandular dots.

1) KOIDZUMI, G. : Journ. College Sci. Imp. Univ. Tokyo 34 : 210. (1913)

Nom. Jap. Kimmizuhiki.

Specim. exam. in SAP.

Hokkaido-*Prov.* Oshima : Hakodate (F. C. GREATREX-Jul. 1916); Usu (K. MIYABE & K. HINO-Aug. 1931); *Prov.* Iburi : Oshamanbe (T. KAWAKAMI-Aug. 1916), Tomakomai (J. HANZAWA-Aug. 1899), Numanohata (J. HANZAWA-Aug. 1899), *Prov.* Hidaka : Horoizumi (Y. TOKUBUCHI-Aug. 1892); *Prov.* Tokachi : Obihiro (M. YANAGIMOTO-Jul. 1892), Ikeda (Ko. ITO-Aug. 1959), Kamiashoro (? leg.-Aug. 1953); *Prov.* Kushiro : Kushiro (G. TANAKA-Jul. 1910), Settyuri (T. KOBANAWA-Jul. 1894 & Suk. ITO-Aug. 1895); *Prov.* Nemuro : Ochiishi (S. ITO-Aug. 1929), Onneto (E. TASHIMO-Aug. 1936), Notsuke (Ko. ITO-Aug. 1961); *Prov.* Kitami : Shiretoko (Ko. ITO-Jul. 1962), Onnebetsu (T. MIYATA-1948), L. Shibunai (T. SAKUMA-Oct. 1953), Rishiri (S. HORI-Aug. 1887, W. HIROSE-Jul. 1896, S. KOMIYA-Jul. & Aug. 1887, & M. TATEWAKI-Jul. 1934); *Prov.* Teshio : Pankenai (M. TATEWAKI-Jul. 1927), R. Teshio (T. ISHIKAWA-Jul. 1892), Uenbetsu (T. ISHIKAWA-Jul. 1891); *Prov.* Ishikari : Kamikawa (H. KOIDZUMI-Jul. 1911), Kamuikotan (K. MIYABE-Aug. 1891), Sapporo (? leg.-Jul. 1880, Aug. 1927 & Aug. 1928, & T. MISUMI-Oct. 1953), Mt. Teine (H. YANAGISAWA-Sept. 1915); *Prov.* Shiribeshi : Zenibako (G. TAKEE et al. Aug. 1931), R. Tomari (T. MISUMI et al.-Jul. 1954), Suttu (Y. TOKUBUCHI-Jul. 1899), Kumaishi (K. MIYABE et al.-Jul. 1890), Okushiri Isl. (K. TOGASHI-Jul. 1935).

Honshu-*Prov.* Musashi; Tokyo (Z. IWAMOTO-1882); *Prov.* Shinano : Azusayama (Ko. ITO & M. TOYHAMA-Aug. 1961), Togakushi (Ko. ITO et al.-Aug. 1961), Mt. Nishi (Ko. ITO et al.-Aug. 1961), Ontake (Ko. ITO-Aug. 1961), Koasama (Ko. ITO-Jul. 1961), Naka-kanbaragun (S. ITO-Jul. 1903); *Prov.* Kii : Naruigawa (M. TATEWAKI-Aug. 1930); *Prov.* Echigo : Koshi-Gun (T. ARAI-Aug. 1903); *Prov.* Ugo : Hirasawa-Mura (M. SAITO-Aug. 1902), Gokurakuno (H. SUZUKI-Aug. 1903), Kinshozi-Zan (T. ABE-Aug. 1903).

Kyushu-*Prov.* Hizen; Iwayayama (Y. OKA-Jul. 1896).

Distr. : Kuriles, Sakhalin, Japan, Amur, S. Manchuria, China, Formosa, Tonkin & Indochina.

2. *Agrimonia nipponica* KOIDZ. Bot. Mag. Tokyo 44 : 104. (1930)

Syn. *A. pilosa* f. *nipponica* ORWILL. c. comb. nud. et Nat. Sci. Mus. Tokyo Bull. 1953: 76. (1953)-*A. pilosa* var. *nipponica* KITAMURA Acta Phytotax. Geobot. 20 : 199. (1962).

The present species has been seemed to be not sufficiently understood for a long time. Taxonomically, KITAGAWA¹⁾ (1958) re-noticed this taxon since KOIDZUMI

1) KITAGAWA, M. : Journ. Jap. Bot. 33 : 161. (1958)

published as a new species. He quoted the results gained by HIGASHI et al.¹⁾ (1956) which from the pharmacological point of view, indicated the Slender Japanese Agrimony was a clearly different taxon from the Common Japanese Agrimony and maintained the opinion that it should be treated as an independent species. His description of the morphological characters of this Agrimony is so appropriate that I will take here from his description; "Stem slender with especially delicate branches; leaves soft, pale beneath and villose mixed with long pilose hairs just as like as ones of *A. coreana* NAKAI (= *A. velutina* Juz.); lateral leaflets usually 1-2 pairs, if in the case of 2 pairs the lower pair reduces abruptly and about 1 cm long; flowers scattered, small; petals 3 mm long, 1 mm wide, oblong and different from ones of *A. pilosa* var. *japonica* which are obovate (cf. fig. 1); fruits small and scatteredly

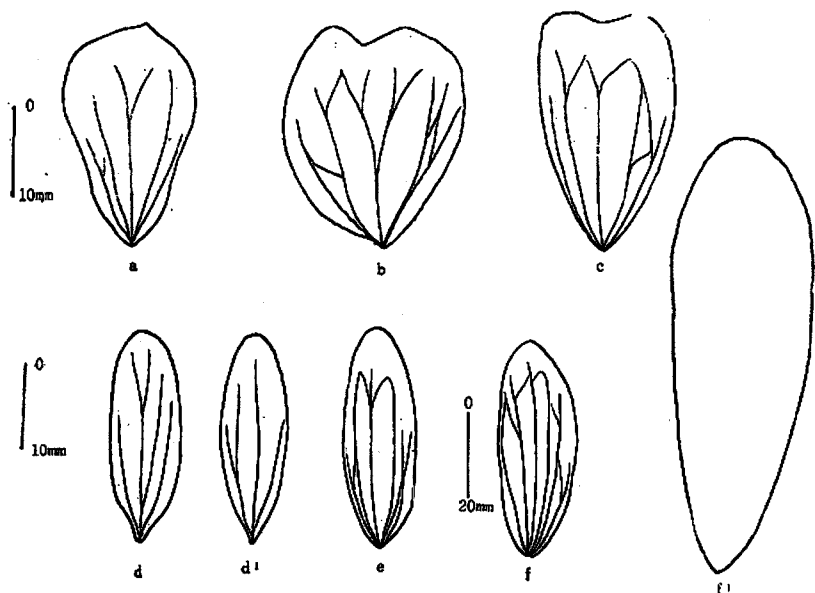


Fig. 1. Petal shapes of *A. pilosa* var. *japonica* NAKAI (a, b, & c), *A. nipponica* KOIDZ. (d, d', & e) and *A. tokatiensis* Ko. ITO (sensu *A. coreana* NAKAI) (f, & f'). All except f are magnified equally and as twice times as f.

a: Shiretoko-Zaki, Prov. Kitami (ipse! Jul. 1962), b: Notsuke-Zaki (ipse! Aug. 1961), c: Numanohata, Prov. Iburi (J. HANZAWA-Aug. 1889), d & d': Mt. Tadeshina, Prov. Shinano (ipse! Aug. 1961), e: Mt. Fuji, Prov. Suruga (ipse! Jul. 1962), f & f': Ikeda, Prov. Tokachi (ipse! Aug. 1959).

1) HIGASHI, J. et al.: Ann. Rep. Fac. Pharm. Tokushima Univ. 5: 65-70. (1956)

pilose on the ferrows" I observed the Slender Japanese Agrimony co-existed with the Common Agrimony and collected them in Azusayama and Mt. Tadeshina, Prov. Shinano. According to my field note these plants show as follows; plants generally low habit, about 30 cm tall with radical, rosette-like leaves even at the flowering time, leaves rather concentrate into the lower part of stem; leaflets obovate, obtuse or rotundate at the top, stiffly pilose on the nerves and scarcely glandular-dots or not glandular-dots beneath, inflorescence usually elongate as far as the half of the whole height; flowers 7-8 mm across, petals narrowly oblong, stamens 5-8 instead of 12-15, the usual number for *A. pilosa* var. *japonica*. The essential distinguishable point of *A. nipponica* was a small flower according to JUZEPČUK (1941), but flower size is variable, from the minute size as so-called the Slender Japanese Agrimony to the large size as the Common Japanese Agrimony. Scarcity of glandular-dots is prominently characteristic in comparison with *A. pilosa* var. *japonica*. The measurements of glandular-dots number within (2×2) mm² are shown in table 1. As known from the table, in *A. nipponica* and *A. coreana* of three taxa mentioned already, the number ranges 0 to 6 and at best 3 on an average, while in *A. pilosa* var. *japonica* the number ranges 6 to 95 and about 60 on an average. Even though the number of the last one shows 6 or 10 dots in a place on a leaflet, at least in other places of the same leaflet show numerous dots, but in the case of the former two the number did not show such a tendency.

Lyrato-pinnate leaves represent a good feature in the typical individual as KITAGAWA (1958) stressed on. The intermediate leaf type, however, rarely were observed in Mt. Tadeshina by me. They were co-existed with the Common Japanese Agrimony on the road-side, forest margin etc. and their leaves were somewhat pinnate, not lyrato-pinnate but it should be noticed as the Slender Japanese Agrimony because they showed a *nipponica* type in regard to other points.

According to SHIMIZU (1958), *A. nipponica* preserved in KYO, with which were identified by KOIDZUMI, has rosette-like radical leaves. In my observation and examination on fields and Herbarium the present taxon had radical leaves at the flowering time except one specimen from Mt. Fuji, which was collected under the broad-leaved forest. This feature was observed in this taxon only, but did not in any other taxa under consideration. I think it should be one of valuable characters in identifying with this Agrimony as the case of *A. Eupatoria* L.

Nom. Jap. Hime-Kinmizuhiki.

Specim. exam. in SAP.

Hokkaido-Prov. Oshima : Hakodate-Hill (I. YAMAMOTO-Oct. 1924)

Honshu-Prov. Kazusa : Mt. Kiyosumi (K. MIURA-Aug. 1910); Prov. Shinano :

Azusayama (Ko. ITO et al.-Aug. 1960), Mt. Tadeshina (Ko. ITO et al.-Aug. 1961); Prov. Suruga : Mt. Fuji (Ko. ITO-Aug. 1962); Prov. Mino : Akasakayama (K. MORI-Sept. 1892); Prov. Mimasaka : ? Nagisan (S. ARIMOTO-Aug. 1903); Prov. Ugo : Kinshozi-Zan (T. MIURA-Aug. 1903).

Kyushu-Prov. Buzen : Toyotsu (T. NAKANO-Sept. 1894).

Distr. endemic

Table 1. The number of glandular-dots within (2×2) mm² on the undersurface of leaves.

Species	Habitat	Number of dots					Average
		I	II	III	IV	V	
<i>A. nipponica</i> KOIDZ.	Mt. Tadeshina	0	5	4	2	5	3.2
	Azusayama	2	3	3	5	1	2.8
	Mt. Fuji	2	0	6	1	2	2.2
	Tokyo	0	3	2	1	1	1.4
<i>A. coreana</i> NAKAI	Ikeda	3	0	0	2	0	1.0
	"	0	1	6	2	1	2.0
	"	0	2	0	2	0	0.8
<i>A. pilosa</i> var. <i>japonica</i> NAKAI	Kiso-Ontake	12	15	15	11	15	15.6
	Yatsugatake-Nishi	12	23	54	61	13	36.2
	Azusayama	45	47	46	23	33	38.8
	Togakushi	23	12	7	12	53	21.4
	Ko-Asama	39	70	21	23	22	35.0
	Hakodate	10	16	14	23	7	14.0
	Shibunai	33	17	10	6	24	18.0
	Ikeda	7	32	15	29	22	21.0
	Shiretoko	23	11	25	17	25	20.0
	Notsuke-Zaki	95	38	57	56	48	58.8

3. *Agrimonia coreana* NAKAI Rep. Veget. Diam. Mt. 71. & 175. (1918) cum descr. Jap. et Kôryô-Shikenrin-no-Ippan 83. (1932) cum descr. Latin.

Syn. *A. velutina* Juz. Fl. URSS 10 : 420. f. 5. et in Addenda 646. (1941)-*A. tokatiensis* Ko. ITO Hokuriku Journ. Bot. 9 : 69. (1961)

The Korean *Agrimonia* is characterized by the slender and delicate stem, large flowers, numerous stamens, soft leaves covered with densely villose hairs and fewer glandular dots beneath, and large flabellate stipules (NAKAI, 1932; KITAGAWA, 1958;

Ito, 1961).

As mentioned already, at first KITAGAWA suggested me that *A. tokatiensis* may be the same as *A. coreana* NAKAI. Latin original description of *A. coreana* represents clearly the characters common to my new species erected carelessly without considering NAKAI's species. I think *A. tokatiensis* may be the same as *A. coreana*.

The distribution of this species is being clarified by KITAGAWA. He announced me this Agrimony has been collected from Prov. Shinano. I have some interesting in the occurrence of the Korean Agrimony in Hokkaido. The species (sensu *A. tokatiensis*) was found that it grew under the *Larix leptolepis* artificial forest. If we remember that *Larix leptolepis* never grow naturally in Hokkaido at present, and that *Larix leptolepis* used to forestry is mainly removed from Prov. Shinano, natural occurrence of the Korean Agrimony in Hokkaido. will be somewhat doubtful. But as ITO (1962) reported, for example, the fact that *Viburnum koreanum* NAKAI which hitherto known in Korea and Manchuria only, was collected in Mt. Jozankei-Tengu, Prov. Ishikari, Hokkaido, is not always to be denied the natural occurrence in Hokkaido of the present species

Nom. Jap. Chosen-Kinmizuhiki, Tokachi-Kinmizuhiki.

Speciem. exam. in SAP.

Hokkaido-Prov. Tokachi : Chiyoda (Ko. ITO-Aug. 1959)

Distr. Manchuria, Korea and Japan

I would express my cordial thanks to Prof. Dr. M. KITAGAWA who gave me valuable advices and spared no pains to copy the original description of *A. coreana* NAKAI, and also Prof. Dr. M. TATEWAKI who directed his guidance to me.

摘 要

日本産キンミズヒキ類について検討の結果、我国にはキンミズヒキ、ヒメキンミズヒキおよびチウセンキンミズヒキが産することを知った。分類上の取り扱いとしては、キンミズヒキは中井博士の説に従ってシベリヤキンミズヒキ (*A. pilosa* LEDEB.) の変種とするのが妥当のように考えられ、ヒメキンミズヒキ、チウセンキンミズヒキは各々独立種と見做される。前二者のうちチウセンキンミズヒキの本邦産については北川博士の御教示によるものであり、又同博士によつて既に、該種がウラジオストクから記述された、*A. velutina* Juz. と同じものであることが発表されていた。また、筆者が先に発表したトカチキンミズヒキが同じものであることも同博士の御教示により、筆者の再検によつて確められた。従つて命名規約上 *A. coreana* NAKAI が採用され、*A. velutina* Juz., *A. tokatiensis* Ko. ITO はそれぞれその異名となるわけである。