

## 日本産シソ属野生種の分類学的再検討

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## Michiho Ito\* and Gisho Honda\* : A Taxonomic Study of Japanese Wild *Perilla* (Labiatae)

伊藤美千穂\*・本多義昭\* : 日本産シソ属野生種の分類学的再検討

### Abstract

Morphological observations, chromosome counts and crossing experiments were made to reexamine species taxonomy of Japanese *Perilla*. In conclusion, four species and one variety are recognized; *P. citriodora*, *P. frutescens* var. *crispa*, *P. frutescens* var. *frutescens*, *P. hirtella*, and *P. setoyensis*. *Perilla citriodora*, *P. hirtella* and *P. setoyensis* are diploid wild species, whereas *P. frutescens* is a cultivated tetraploid plant.

**Key words** : chromosome number, Japan, *Perilla*, polyploidy, taxonomy.

Japanese *Perilla* has been generally treated as single species, *P. frutescens* having four varieties; var. *citriodora*, var. *crispa*, var. *frutescens* and var. *hirtella* (Kitamura *et al.* 1957; Makino 1914, 1933, 1989; Murata 1982; Murata and Yamazaki 1993; Ohwi 1978). A different system is proposed by Nakai (1917), who recognized var. *citriodora* and var. *hirtella* as independent species, *P. citriodora* and *P. hirtella*.

Our recent chromosome counts revealed var. *citriodora* as  $2n=20$ , and var. *crispa* as  $2n=40$  (Honda *et al.* 1994).  $F_1$  hybrids between var. *citriodora* and var. *crispa* obtained by artificial crossing was sterile. Thus we proposed that var. *citriodora* should be regarded as an independent species from *P. frutescens* var. *crispa* (Honda *et al.* 1994). We also reported a new species, *P. setoyensis* from the surrounding area of the inland sea of Japan (Honda *et al.* 1996).

These facts led us to the reexamination of the classification of Japanese *Perilla*. Here we propose our revision of the taxonomy on wild species, based on the results of morphological examination and crossing experiments. For cultivated plants, in this report, we abide by the description of Flora of Japan IIIa (Murata and Yamazaki 1993).

### Materials and Methods

Plant materials: Wild and cultivated *Perilla* plants from various regions of Japan were cultivated at the Experimental Station for Medicinal Plant Research, Faculty of Pharmaceutical Sciences, Kyoto University. Their morphological and chemotaxonomic characteristics were examined for several years. All these strains of *Perilla* have been kept properly by self-pollination.

Chromosome numbers were determined with root tips of plants grown in the greenhouse. Root tips were pretreated with a saturated aqueous solution of 8-hydroxyquinoline (2 mM) for 4 hours at room temperature and then fixed with a mixture of ethanol and acetic acid (3:1). The microscopic slides were prepared by the Feulgen squash method.

All the specimens of *Perilla* kept in KYC, MAK, TI and TNS were examined. The results of the identification were listed at the end of this report.

Crossing was performed among three taxa of *Perilla*, following emasculation and pollination procedures of Honda *et al.* (1994). The success of cross pollination was confirmed by checking their morphological and chemical characteristics (Honda *et al.* 1994). Seed fertility was calculated as  $(Nm / 4 Nc) \times 100$ , where  $Nm$  is the

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number of fertile mericarps and  $N_c$  is the number of calyx.

### Results and Discussion

As a conclusion, we recognize the following four species and one variety; *P. citriodora* ("lemon-egoma"), *P. frutescens* var. *crispa* ("shiso"), *P. f.* var. *frutescens* ("egoma"), *P. hirtella* ("torano-o-jiso") and *P. setoyensis* ("seto-egoma").

Table 1 summarizes morphological characteristics (Figs. 2-6), and chromosome numbers of Japanese *Perilla*, together with distribution areas. Two cultivated plants, *P. frutescens* var. *crispa* and var. *frutescens* are  $2n=40$ , whereas three wild species, *P. citriodora*, *P. hirtella* and *P. setoyensis* are  $2n=20$  (Fig. 1; Honda *et al.* 1994). These two groups are distinct in the pubescence of stems (Fig. 2); taxa of  $2n=40$  have sparse villi while species of  $2n=20$  have dense, curved, and short hairs.

*Perilla frutescens* var. *frutescens* is cultivated mainly for its fruits, and var. *crispa* is for leaves. Mericarps of var. *frutescens* are generally much larger than those of var. *crispa*. However, these two varieties can easily cross, and their hybrids are fertile. Accordingly, there are intermediate forms varying continuously between them.

Among wild *Perilla*, *P. citriodora* differs from *P. hirtella* and *P. setoyensis*, and resembles *P. frutescens* in its wide and short inflorescence before flowering (Fig. 3). The white bract is unique to *P. citriodora*.

Young inflorescences of *P. hirtella* and *P. setoyensis* are slender and long. However *P. hirtella* is quite unique among Japanese *Perilla* in having conspicuous villi about 2 mm long above lamina and distinct serration at leaf base (Fig. 5). The serration at the leaf base is unclear in the other species.

Among herbarium specimens, which we examined and listed in this paper, *P. setoyensis* have been identified as *P. frutescens* var. *frutescens* or *P. f.* var. *citriodora*. However, these three taxa are morphologically distinguishable, by pubescence of stems and appearance of young inflorescences. Among wild species, only *P. setoyensis* has white corolla. The corolla is reddish-pink in *P. citriodora* and *P. hirtella*.

Three wild species grow near streams under mixed forests. *Perilla hirtella* and *P. citriodora* occur in the Pacific side from Kanto district to the westward in Japan (Figs. 7, 8; Honda *et al.* 1996). *Perilla setoyensis* is endemic to the inland sea region of Japan and has not been found in Kyushu (Honda *et al.* 1996).

Seed fertility of self-pollinated flowers of hybrids between three wild species and that of their parents were shown in Table 2. The interspecific  $F_1$  plants show seed fertility less than 10%, while their parental plants showed 67-82% of fertility. Thus, three wild species are reproductively isolated from each other.

Key to the species:

- 1 a Stems with thick, short and curved hairs;  $2n=20$  (native plants).
  - 2 a Young inflorescences green, columnar and tapering; bracts orbicular-ovate, acuminate at apex, densely villous along margin, persistent after fruiting; stamens long exerted from corolla.
    - 3 a Conspicuously serrated at whole margin; lamina broadly elliptic, having sparse long villi above; corolla reddish pink to pink .....1. *P. hirtella*
    - 3 b Not conspicuously serrated at base; lamina ovate to broadly ovate, without long villi above; corolla white .....2. *P. setoyensis*
  - 2 b Young inflorescences white, thick and short, obtuse at apex; bracts transversely elliptic, cuspidate at apex, having sparse short hairs along margin, mostly caducous at fruiting; stamens slightly exerted from corolla .....3. *P. citriodora*
- 1 b Stems with sparse hairs of unequal length;  $2n=40$  (cultivated plants).
  - 2 a Lamina flat and thick, mostly green; corolla white, rarely pale pink; mericarps compressed-spherical, 1.5-2.0 mm in diameter, brown or gray or white .....*P. frutescens* var. *frutescens*
  - 2 b Lamina crispate or flat, thin, reddish purple or green; corolla reddish pink or white; mericarps compressed-spherical, 0.7-1.5 mm in diameter, dark brown to brown .....*P. frutescens* var. *crispa*

Table 1. Comparison of the characteristics of Japanese *Perilla*

Character	<i>P. hirtella</i>	<i>P. setoyensis</i>	<i>P. citriodora</i>	<i>P. frutescens</i> var. <i>frutescens</i>	<i>P. frutescens</i> var. <i>crispata</i>
Stem hair	short, curved	short, curved	short, curved	long	long, short
Stem pubescence	dense	dense	dense	sparse or dense	sparse
Lamina (shape)	broadly elliptical	ovate to broadly ovate	orbicular-ovate to broadly ovate	ovate to broadly ovate	broadly ovate, sometimes crispate
Lamina (hair)	short, long (some)	short	short	short	short
Serration at leaf base	distinct	indistinct	indistinct	indistinct	indistinct
Color of abaxial side of lamina and petiole	green or reddish purple	pale green	reddish purple or green	green	reddish purple or green
Young inflorescence (shape)	tapered long columnar	tapered long columnar	thick short columnar	thick short columnar	thick short columnar
Young inflorescence (color)	green with gray stripes	green	white	green	green to reddish purple
Corolla	reddish pink	white	pink	white, rarely pink	reddish pink to pink or white
Anther	reddish purple	white to brown	reddish purple	brown, rarely reddish purple	brown to reddish purple
Calyx hair	short and long, dense	short and long, dense	short and long, dense	short and long, sparse or dense	short and long, sparse
Bract (shape)	orbicular-ovate to rhomboid-orbicular	orbicular-ovate to broadly ovate	transversely elliptic to depressedly ovate	ovate to broadly ovate	ovate to broadly ovate
Bract (marginal hair)	dense, long	dense, long	sparse, short	sparse, short	sparse, short
Bract (color)	green with reddish margin	green	white	green	green to reddish purple
Bract (persistence)	persistent at fruiting	persistent at fruiting	caducous at fruiting	persistent at fruiting	persistent at fruiting
Weight of 1000 mericarps	0.5-0.6g	0.3-0.4g	0.8-1.0g	1.0-1.5g	0.5-1.0g
Chromosome number (2n)	20	20	20	40	40
Distribution	Honshu, Shikoku Kyushu	Honshu, Shikoku	Honshu, Shikoku Kyushu	(cultivated)	(cultivated)

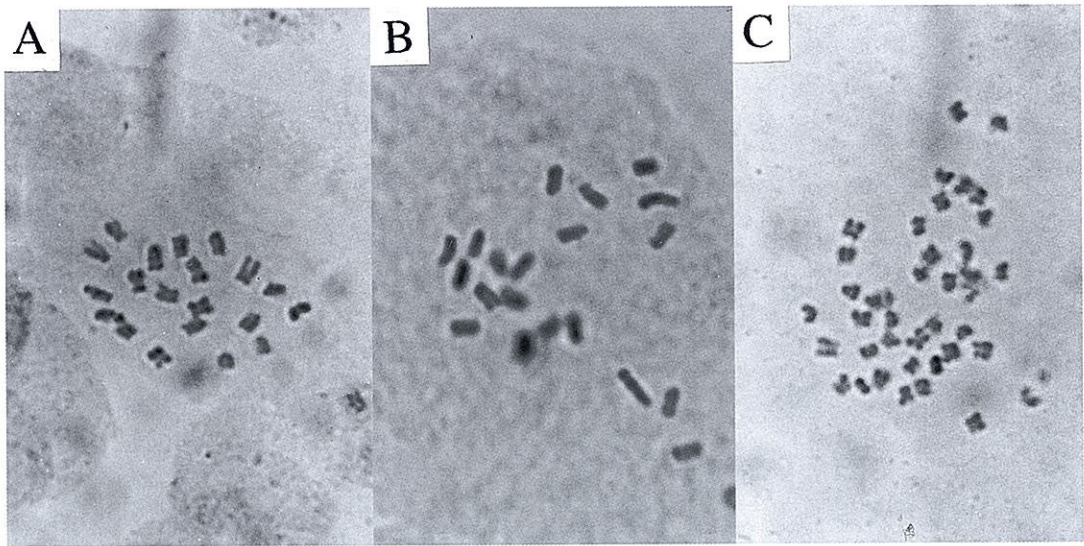


Fig. 1. Somatic chromosomes of three taxa of *Perilla*. A: *P. hirtella*, B: *P. setoyensis*, C: *P. frutescens* var. *frutescens*.

1. ***Perilla hirtella*** Nakai in Bot. Mag. Tokyo 31: 286 (1917). *Perilla frutescens* (L.) Britton var. *hirtella* (Nakai) Makino et Nemoto in Flora of Japan, ed. 2: 1026 (1931).

Japanese name: Torano-ojiso.

Plants annual, about 50–90 cm tall. Stems quadrangular, densely covered with short, curved hairs, 0.2–0.3 mm long. Leaves opposite, pale to dark green, broadly elliptic, 7–11 cm long, 5–8 cm wide, acuminate at apex, distinctly serrated at whole margin, covered with short hairs ca. 0.1 mm long, as well as sparse 1–2 mm-long villi; petioles usually reddish purple. Young inflorescence columnar and tapering, much longer than that of *P. frutescens*; bracts tightly imbricated. Terminal inflorescence 80–100 flowered. Corolla bilabiate, 3–4 mm long, reddish pink. Stamens long exerted from corolla; anthers reddish purple. Calyx 3–4 mm long, ca. 2 mm across at flowering, accrescent, covered with short hairs (ca. 0.1 mm long) and villous hairs (0.1–1.5 mm long). Bracts orbicular-ovate to orbicular-rhomboid, ca. 5 mm long, 3.5–4.0 mm wide, acuminate at apex, having thick villi (0.7–1.0 mm long) along margin, with short hairs at apex, green but reddish at margin, persistent. Mericarp compressed-spherical, 0.9–1.0 mm across, brown, reticulate-patterned, ca. 0.3 g per 1000 grains.

Distribution: Pacific side from Kanto district to the westward in Honshu, Shikoku and Kyushu. Chromosome number:  $2n=20$ .

2. ***Perilla setoyensis*** G. Honda in J. Jpn. Bot. 71: 39–43 (1996)

Japanese name: Seto-egoma.

Plants annual, about 50–100 cm tall. Stem quadrangular, densely covered with short, curved hairs, 0.2–0.5 mm long. Leaves opposite, bright green to green, ovate to broadly ovate, 10–13 cm long, 6–8 cm wide, acuminate at apex, scarcely serrated at leaf base, covered with short hairs ca. 0.1 mm long. Young inflorescence green, colum-

Table 2. Seed fertility of the self-pollinated flowers of three wild *Perilla* species and their interspecific hybrids

Strain number	Seed fertility (%) $\pm$ S.D.
<Parent>	
87 ( <i>P. citriodora</i> )	81.45 $\pm$ 9.64 (n*=5)
4993 ( <i>P. hirtella</i> )	67.00 $\pm$ 6.54 (n=5)
5031 ( <i>P. setoyensis</i> )	75.27 $\pm$ 6.16 (n=6)
<First filial generation>	
5123 (87 $\times$ 5031)	0.27 $\pm$ 0.26 (n=15)
5124 (5031 $\times$ 4993)	1.37 $\pm$ 0.62 (n=18)
5129 (4993 $\times$ 87)	8.87 $\pm$ 2.43 (n=17)

\*number of plants examined.



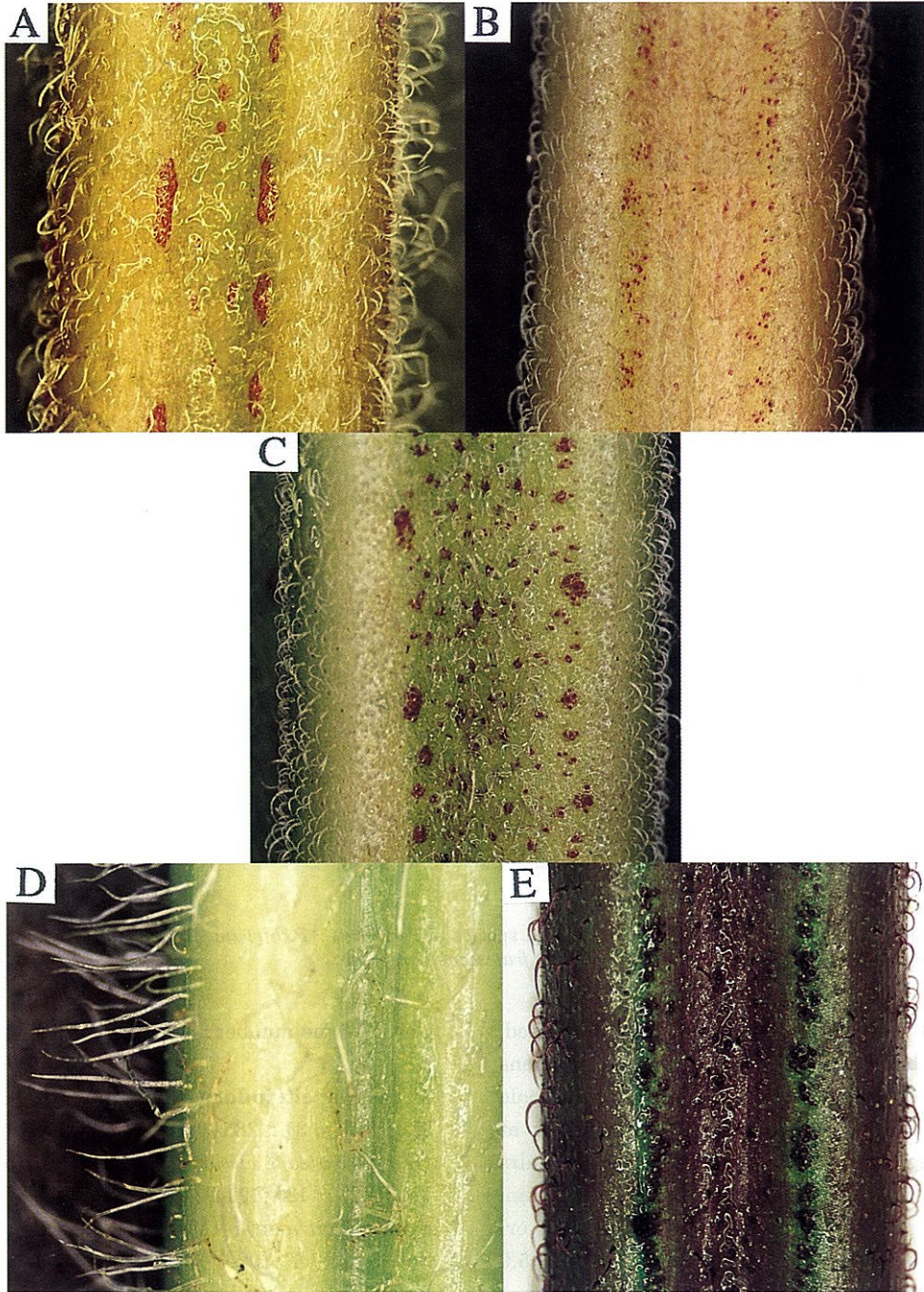


Fig. 2. Stems of wild and cultivated species of *Perilla*. A: *P. hirtella*, B: *P. setoyensis*, C: *P. citriodora*, D: *P. frutescens* var. *frutescens*, E: *P. frutescens* var. *crispa*.



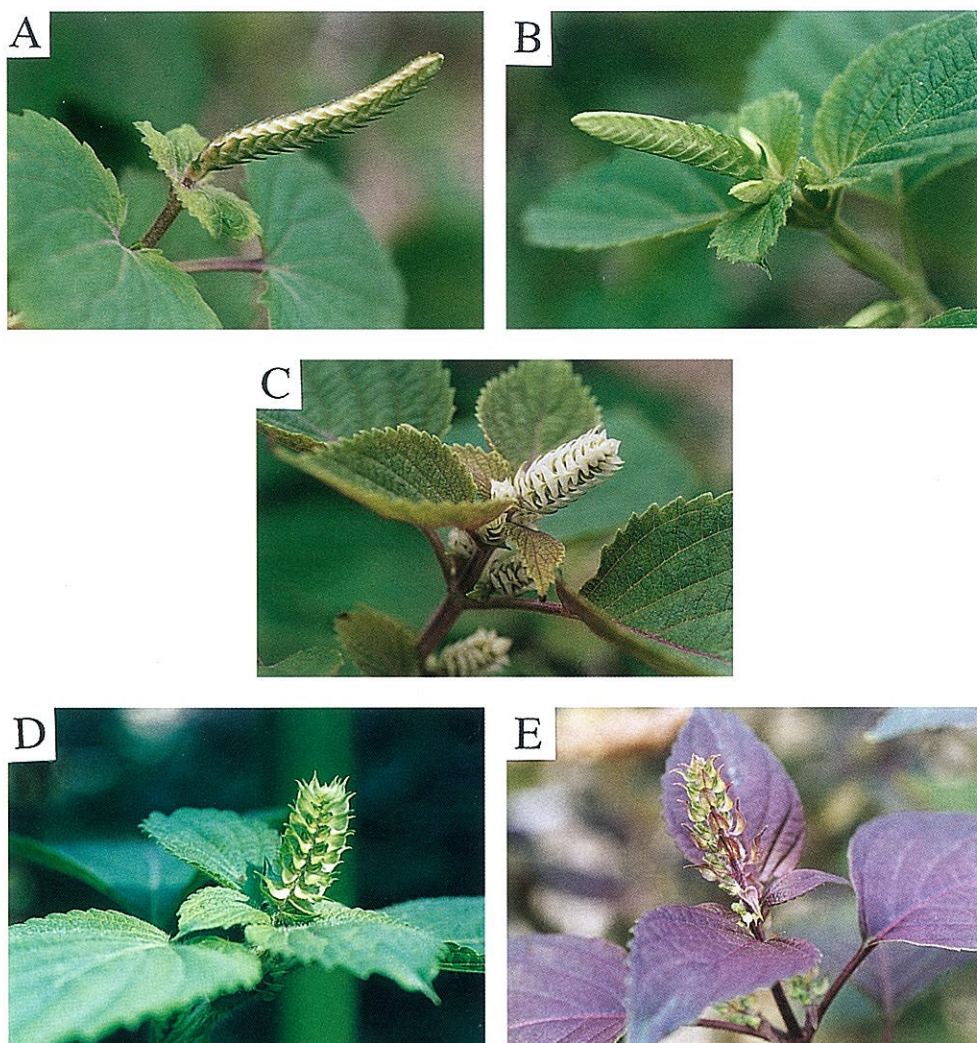


Fig. 3. Young inflorescences of wild and cultivated species of *Perilla*. A: *P. hirtella*, B: *P. setoyensis*, C: *P. citriodora*, D: *P. frutescens* var. *frutescens*, E: *P. frutescens* var. *crispa*.

nar and tapering, with bracts tightly imbricated. Corolla bilabiate, 4–5 mm long, white. Stamens long exserted from corolla, anthers white to pale brown. Calyx 5–7 mm long, 2–3 mm across at flowering, accrescent, covered with short hairs (ca. 0.1 mm long) and villous hairs (1.0–1.5 mm long). Bracts orbicular-ovate to depressed orbicular, acuminate at apex, 6–7 mm long, 4.5–5.0 mm wide, having thick villi (0.5–1.0 mm long) along margin, green, persistent. Mericarp compressed-spherical, 1.0–1.2 mm across, brown, reticulate-patterned, 0.5–0.6 g per 1000 grains. Distribution: Endemic to the mediterranean coastal region of Japan.

Chromosome number:  $2n=20$ .

3. *Perilla citriodora* (Makino) Nakai in Bot. Mag. Tokyo 31: 285(1917). *Perilla ocymoides* (L.)  $\alpha$  *typica* f. *citriodora* Makino in Bot. Mag. Tokyo 28: 180(1914). *Perilla frutescens* (L.) Britton f. *citriodora* (Makino) Makino in J. Jpn. Bot. 3 (2): 7 (1926). *Perilla frutescens* (L.) Britton var. *citriodora* (Makino) Ohwi in Bull. Nat. Sci. Mus. Tokyo 33: 85 (1953).

Japanese name: Lemon-egoma.

Plants annual, about 50–90 cm tall, Stem quadrangular, densely covered with curved short hairs, 0.2–0.3 mm long. Leaves opposite, green

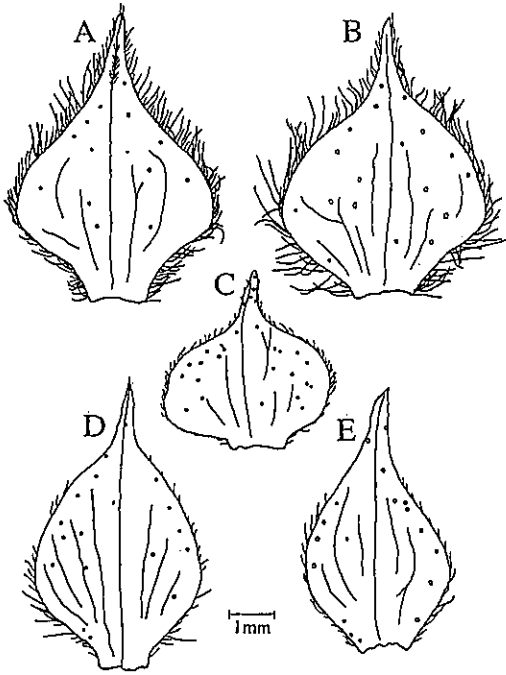


Fig. 4. Bracts of wild and cultivated species of *Perilla*. A: *P. hirtella*, B: *P. setoyensis*, C: *P. citriodora*, D: *P. frutescens* var. *frutescens*, E: *P. frutescens* var. *crispa*.

to dark green, ovate to broadly ovate, 8–12 cm long, 6–8 cm wide, acuminate at apex, scarcely serrated at leaf base, often purplish beneath as well as petioles. Young inflorescence white, columnar, obtuse at apex. Terminal inflorescence 60–80 flowered. Corolla bilabiate, 4–5 mm long,

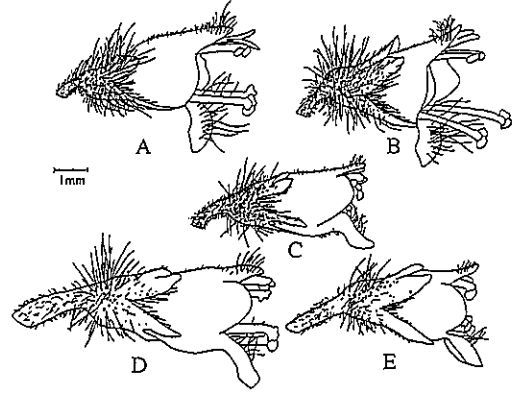


Fig. 6. Flowers of wild and cultivated species of *Perilla*. A: *P. hirtella*, B: *P. setoyensis*, C: *P. citriodora*, D: *P. frutescens* var. *frutescens*, E: *P. frutescens* var. *crispa*.

pale pink to pink. Stamens slightly exerted from corolla, anthers reddish purple. Calyx covered with short hairs (ca. 0.1 mm long) and villos hairs (0.7–1.2 mm long), 4–6 mm long at flowering, accrescent. Bracts white, transversely elliptic to depressed-ovate with cuspidate apex, 4–5 mm long, 3.5–4.5 mm wide, sparsely hairy along margin, caducous. Mericarp compressed-spherical, ca. 1.3 mm across, brown to dark brown, reticulate patterned, 0.8–1.0 g per 1000 grains.

Distribution: Pacific side from Kanto district to the westward in Honshu, Shikoku and Kyushu.

Chromosome number:  $2n=20$ .

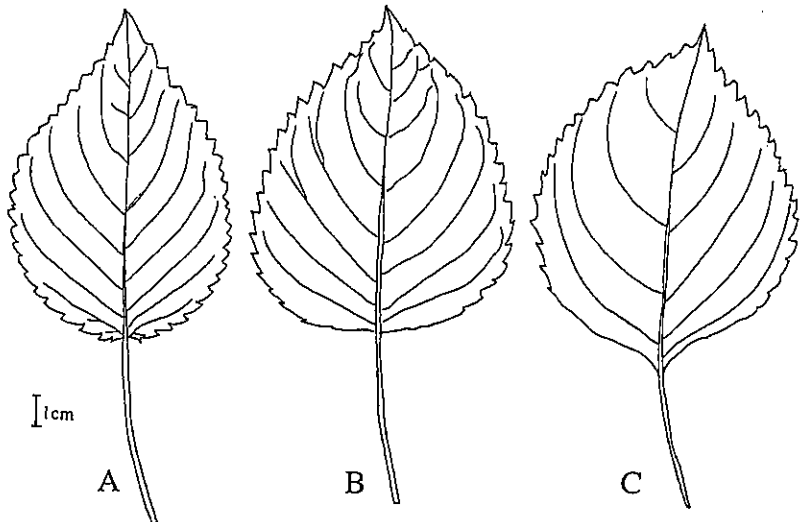
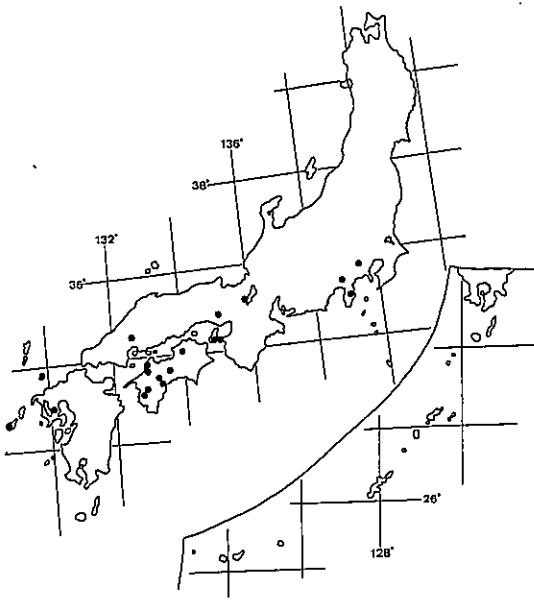


Fig. 5. Leaves of wild species of *Perilla*. A: *P. hirtella*, B: *P. setoyensis*, C: *P. citriodora*.

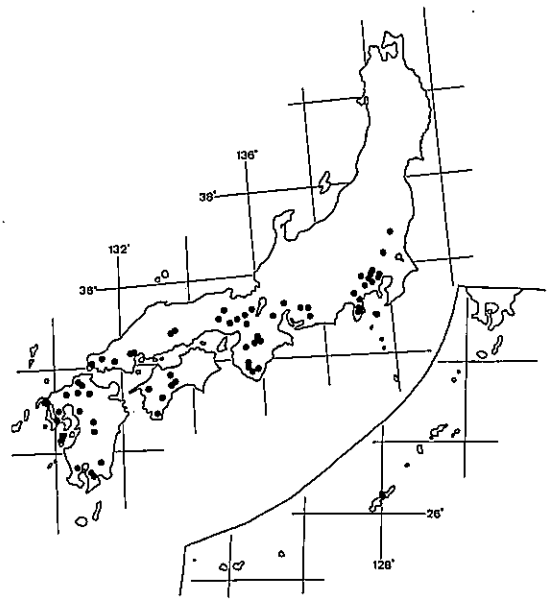


Fig. 7. Distribution of *P. hirtella* in Japan.

#### Specimens examined

##### *Perilla hirtella* Nakai

Tokyo Pref.: Hachiohji-shi, Mt. Takao (T. MAKINO, 5 Oct. 1913, KYO, MAK-51343; T. NAKAI, 23 Sep. 1917, TI; S. KARASAWA, 25 Oct. 1927, TI). Shizuoka Pref.: Sunto-gun, Nagaizumi-cho, Suijinja, Eastern foot of Mt. Ashitaka (T. FUJIMURA and M. FUKUI 39, KYO); Mt. Amagi, near Yugashima (T. YAMAZAKI, 22 Oct. 1944, TI). Shiga Pref.: Otsu-shi, Mt. Tachiki-yama (28 Oct. 28, TNS-232142). Hyogo Pref.: Kita-ku, Yamada-cho, Southeastern slope of Mt. Tanjo, alt. 100-300 m (N. FUKUOKA and N. KUROSAKI 2159, 1978, KYO); Sumoto-shi, Mt. Kashihara (S. MATSUZAWA, 1910, KYO-60544). Wakayama Pref.: Wakayama-shi, Tomogashima (Y. OGAWA, 24 Oct. 1955, KYO). Hiroshima Pref.: Fukayasu-gun, Kamo-cho, Yamano, Sarunaki-kyo (K. MATSUMOTO 569, 15 Sep. 1971, KYO); Fukayasu-gun, Kamo-cho, Yamano, Ryuzu no taki (S. TAKAFUJI 641, 2 Oct. 1968, KYO). Kagawa Pref.: Nakattatsuto-gun, Kotonan-cho, Misumi (S. MITSUYA, 5 Sep. 1982, TI). Ehime Pref.: Nishiuwa-gun, Miyauchimura, Tsuzumiwo (Y. NOMURA 10, 2 Nov. 1952, KYO); Nishiuwa-gun, Isozu-mura, Hirohaya (Y. NOMURA 33-1, 2, 30 Sep. 1954, KYO); Matsuyama-shi, bank of Ishite-gawa rev. (S. YAMAMOTO, 16 Aug. 1955, KYO); Matsuyama-shi, Okudogo (13 Oct. 1968, TNS-32375). Kochi Pref., Suzaki-shi,

Fig. 8. Distribution of *P. citriodora* in Japan.

Suzaki (T. MAKINO, 1897, MAK-60546); Takaoka-gun, Etsuchi-cho, Taison (T. MAKINO, 1934, MAK-60516); Tosashimizu-shi, Ashizuri-misaki (S. KITAMURA and G. MURATA 2433, 22 Nov. 1966, KYO); Tosa-gun, Kagami-mura, Anagawa (T. YAMANAKA, 28 Sep. 1968, KYO). Nagasaki Pref., Minamimatsuura-gun, Fukue-jima, Tamanoura-cho, Shimasen-jima, alt. 5 m (G. MURATA and H. YUYAMA, 22 Aug. 1982, KYO); Ohmura-shi, Hidomari (F. UENO, Sep. 1971, KYO); Iki, Hakosaki-mura (Nov. 1956, TNS-126106).

##### *Perilla setoyensis* G. Honda

Kyoto Pref.: Kyoto-nishi, Arashiyama (F. MURATA, 27 Oct. 1962, KYO-17624); Kameoka-shi, Hozu-cho, along the rout Saga-Kameoka line, alt. 80 m (S. TSUGARU and G. MURATA, 19 Oct. 1992, KYO-17257); Otokuni-gun, Ponpon-yama (H. YAMAMOTO 440, 1 Oct. 1933, TI). Okayama Pref.: Kawakami-gun, Bitchyu-cho, Tahara (I. OHKUBO, 8 Oct. 1980, KYO). Hiroshima Pref.: Ajina-gun, Fujio-mura (Y. KATO 3 Sep. 1939, KYO). Ehime Pref.: Syuso-gun, Sakuragi-mura, Kawanose (I. YOGO, 1933, MAK-65841); Syuso-gun, Mt. Sekiyayama (I. YOGO, 13 Sep. 1931, KYO). Kochi Pref., Kimi-gun, Monobe-mura, Kamogamine, alt. 400 m (H. TAKAHASHI 5715, 17 Oct. 1981, KYO).

##### *Perilla citriodora* (Makino) Nakai

- Ibaraki Pref. : Higashiibaraki-gun, Mt. Omaeyama (N. WADA 4102, 12 Sep. 1971, KYO).  
 Tochigi Pref. : Ungonji (H. HARA, 19 Oct. 1981, TI) ; Tanuma-cho, Mt. Hourai, Hatagawa rev. (M. TSUCHIDA, 24 Sep. 1990, MAK-266294).  
 Saitama Pref. : Kasukabe-shi, Kasukabe (T. MAKINO, 1920, MAK-37179, KYO).  
 Tokyo Pref. : Hachiohji-shi, Ongata-mura, Shiroyama (T. SATO, 23 Sep. 1934, TI-2587 ; K. HASEGAWA, 5 Oct. 1965, TI) ; Hachiohji-shi, Asakawa-mura (T. MAKINO, Oct. 1926, MAK-60501) ; Hachiohji-shi, Ongata, Shiro-sawa (Y. TOKASHIKI, 28 Oct. 1955, MAK-24675) ; Mt. Takao, Jataki (H. HARA and S. KUROSAWA, 29 Sep. 1949, TI) ; Mt. Takao (T. NAKAI, 23 Sep. 1917, TI ; K. HISAUCHI, 28 Sep. 1919, TI ; M. MIZUSHIMA, TI-2431 ; J. KOBAYASHI, 7 Oct. 1962, MAK-253058 ; K. HISAUCHI, 26 Sep. 1915, KYO ; K. HISAUCHI, 14 Oct. 1917, KYO) ; Setagaya, Senkawa (T. MAKINO, 7 Oct. 1930, MAK-60502) ; Chofu-shi, Tsumura herbal garden (T. MAKINO, 17 Oct. 1933, MAK-60531, KYO) ; Itsukaichi-shi, Mt. Kariyose, alt. 200-400 m (Y. TATEISHI, J. MURATA and M. IJIMA, 15 Sep. 1978, TI-4443) ; Mt. Kariyose (T. NAKAI, Sep. 1929, TI) ; Nerima, Ohizumi (T. MAKINO, 6 Oct. 1942, MAK-51335, KYO ; T. MAKINO, 23 Oct. 1944, MAK-51336, KYO) ; Shinjyuku, Ohkubo (T. MAKINO, Oct. 1896, MAK-60493, 60496) ; Koiwa-mura (T. MAKINO, 28 Oct. 1923, MAK-51333) ; Ohshima island (TASHIRO, 2 Sep. 1887, TI).  
 Kanagawa Pref. : Ashigarashita-gun, Yugawara-cho, Okuyugawara (J. KOBAYASHI, 27 Mar. 1960, MAK-252626).  
 Shizuoka Pref. : Izu, Kamo-gun, Nanjo-mura (Y. KIMURA, 22 Oct. 1944, TI-259) ; Izu, Amagi, Nekogoe-touge (H. HARA, 17 Oct. 1952, TI) ; Izu, Yugashima (H. KANAI, 17 Sep. 1961, TI) ; Suruga, Utsudani (J. SUGIMOTO, 16 Dec. 1928, TI) ; Suruga, Mt. Ataka, Sut-sugawa rev., alt. 300 m (H. KANAI, 20 Sep. 1954, TI-5498).  
 Aichi Pref. : Tsushima (unknown, 5 August 1921, TI) ; Yana-gun, Mt. Ishimaki (G. MURATA and T. SHIMIZU 1225, 29 Sep. 1956, KYO) ; Hoi-gun, Ichinomiya-mura, Toujou (K. TORII, 5 Oct. 1947, KYO) ; Minamishitara-gun, Nagashino-mura (K. TORII 1852, 22 Sep. 1940, KYO).  
 Mie Pref. : Mt. Komono (C. NAKAJIMA, Sep. 1928, TI).  
 Kyoto Pref. : Mt. Hiei, alt. 650 m (G. MURATA, 13 Sep. 1961, MAK-18913, KYO-14612) ; East part of Arashiyama (G. MURATA, 27 Oct. 1962, TI) ; Arashiyama, Kamome-tani (G. MURATA 10342, 19 Sep. 1956, KYO ; G. MURATA 17624, 27 Oct. 1962, KYO) ; Kyoto (G. KOIZUMI, Oct. 1922, KYO) ; Otokuni-gun, Ohharano-mura, Mt. Ponponyama, Izuriha (H. YAMAMOTO 440, 1 Oct. 1933, KYO) ; Tsuzuki-gun, Ujidawara-cho, Jubusen, alt. 450 m (G. MURATA 37094, 17 Sep. 1978, KYO).  
 Nara Pref. : Matsuyama, Morino vegetable garden (T. MAKINO, Oct. 1919, MAK-60489, KYO) ; Mt. Kasugayama (G. KOIZUMI, Oct. 1922, KYO) ; Nara-shi, between Kasuga and Ninnikusen (G. MURATA 19981, 17 Sep. 1967, KYO) ; Mt. Katsuragi, alt. 400 m (G. MURATA 15447, 22 Oct. 1961, KYO).  
 Wakayama Pref., Kimi-mura (Y. OGAWA, 4 Oct. 1936, TI) ; Hidaka-gun, Kaminambu-mura (T. UI, Oct. 1927, TI) ; Nishimuro-gun, Ikumamura, Shimotaki (K. MITSUHASHI, 14 Oct. 1956, MAK-1484) ; Nishimuro-gun, Kitatonda-mura (C. NAKAJIMA, 12 Oct. 1930, KYO ; T. YAMAMOTO 55, 30 Oct. 1955, KYO) ; Nachi-mura, Ohaza-Hamamiya (K. MINAKATA, 1904, MAK-60510) ; Higashimuro-gun, Nachikatsuura-cho (T. MAKINO, 1924, MAK-60539) ; Mt. Nachi (C. NAKAJIMA, 29 Aug. 1926, TI ; K. MINAKATA, 7 Oct. 1904, MAK-70177).  
 Hyogo Pref. : Kobe-shi, Kita-ku, Mt. Tanjou, alt. 400-500 m, in forest (N. FUKUOKA 12969, 7 Oct. 1987, MAK-250115) ; Mihara-gun, Mihara-cho, Yagi-amano, Umakai, Nariai-dam, alt. 200-400 m (N. FUKUOKA, N. KUROSAKI and S. MIYAKAE 5779, 23 Sep. 1993, MAK-277655) ; Hikami-gun, Hikami-cho, Kiyosumi (S. HOSOMI 5792, 17 Sep. 1967, KYO) ; Inagawa-cho, between Shimizu and Mt. Hirugadake, alt. 200-500 m (N. KUROSAKI 15032, 20 Oct. 1985, KYO).  
 Okayama Pref. : Kawakami-gun, Nariwa-machi, Mt. Shiroyama (Z. YOSHINO, Sep. 1918, KYO-190, 650).  
 Hiroshima Pref. : Miyajima island (Y. FUJITA, 2 Oct. 1961, KYO ; Y. FUJITA, 28 Sep. 1962, KYO) ; Saeki-gun, Miyajima-cho, Enoura (T. SEKI, 22 Sep. 1966, KYO).  
 Yamaguchi Pref. : Toyoura-gun, Kamitama (K. IKEDA, 4 Sep. 1928, TI) ; Ohtsugun, Misumi-mura (S. NIKAI, 10 Oct. 1924, TI) ; Mt. Namerayama, Fujigatani (S. OKAMOTO, 8 Sep. 1949, KYO).  
 Ehime Pref. : Iyonii-gun, Kanbe-mura (H. YAMAMOTO, 23 Sep. 1928, MAK-60547) ; Kitauwa-gun, Misugi-mura (H. YAMAGUCHI, 29 Aug. 1928, KYO).  
 Kochi Pref. : Takaoka-gun, Sagawa-cho (T. MAKINO, Oct. 1892, MAK-60514) ; Takaoka-gun, Ochi-cho, Mt. Yokogura (T. YAMANAKA 43861, 3 Oct. 1965, KYO) ; Mt. Yok-

ogura, alt. 400 m (G. MURATA 10998, 22 Sep. 1957, KYO) ; Kochi-shi, Usa-cho, Ryu (M. TAGAWA and K. IWATSUKI 2061, 24 Sep. 1957, KYO) ; Tosashimizu-shi, Mt. Takenouchi (T. YAMANAKA 51035, 29 Sep. 1967, KYO) ; Suzaki-shi, Hanjagamori (T. YAMANAKA 71466, 1 Oct. 1976, KYO). Fukuoka Pref. : Munakata-mura, Ohtori (Y. NABESHIMA, 10 Sep. 1930, TI) ; Mt. Kokyo (T. MAKINO, 1940, MAK-70172) ; Mt. Inudake (unknown, 4 Oct. 1933, KYO). Saga Pref. : Kijima-gun, Nishimatsuura, Mt. Kurokami (T. HASHIMOTO, 3 Oct. 1951, TI) ; T. MAKINO, 1932, MAK-176421) ; Mt. Iwao, Michinooguchi (H. HARA, 1 Nov. 1952, TI) ; near Nagasaki-shi (F. C. GREATREX, Oct. 1935, TI) ; Fujitsu-gun, Mt. Tataradake (OHMORI, 27 Sep. 1908, MAK-70173). Kumamoto Pref. : Tamana-gun, Fumoto-mura (Y. NABESHIMA, 30 Sep. 1930, TI) ; Amakusa-gun, Amakusa-cho (T. MAKINO, 1928, MAK-60543, 70176) ; Houtaku-gun, Takuma-mura (H. KOUZUMA, 17 Sep. 1905, MAK-60549) ; Kuma-gun, Nogami-mura (Z. TASHIRO, 15 Sep. 1922, KYO) ; Yumae-mura (K. MAEBARA 2606, 25 Sep. 1920, KYO) ; Mt. Ohira (K. MAEBARA 3054, 6 Oct. 1929, KYO). Kagoshima Pref., Osumi, Futamata, Nishinosawa (Y. MORIYAMA, 3 Oct. 1958, TI) ; Osumi, Makisono-mura (Z. TASHIRO, 24 Sep. 1918, KYO) ; Kagoshima-shi, Hiratani (H. TAKAHASHI 4114, 28 Sep. 1979, KYO) ; Tarumi-shi, Mt. Takakuma, alt 400 m (H. TAKAHASHI 1123, 10 Oct. 1971, KYO). Nagasaki Pref. : Kamiagata-gun (S. KOBAYASHI, Sep. 1908, MAK-238690) ; Kitamatsuura-gun, Nakano-mura, Mt. Anmandake (I. KAWAUCHI, 3 Nov. 1932, MAK-70174). Okinawa Pref. : Okinawa (T. MIYAGI, Oct. 1968, TI) ; Mt. Nagotake (T. MIYAGI 209, 24 Sep. 1910, KYO).

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### 摘要

日本産シソ属植物について、各地の標本館に所蔵される標本の検定及び野外観察と京都大学薬学部での栽培観察のもとに分類学的な再検討を行なった。その結果、これらはシソ *Perilla frutescens* var. *crispa*, エゴマ *P. frutescens* var. *frutescens*, トラノオジソ *P. hirtella*, レモンエゴマ *P. citriodora* とセトエゴマ *P. setoyensis* の4種1変種に分類することがふさわしいと判断された。レモンエゴマ、トラノオジソとセトエゴマは2n=20の野生種であり、シソとエゴマは2n=40の栽培種であって、後二者は互いに変種の関係にある。野生種と栽培種は茎の毛の様子で最もよく区別され、前者は下向きに湾出した短軟毛が密生し、後者は長毛または短毛が疎生する。野生種3種は若い花穂の形態によって、また葉の基部の鋸歯の様子によって区別される。シソとエゴマでは容易に交雑が起きて様々な形態のものが存在するため、厳密な定義は難しい。

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