

## The Cultivated Brassicae of China and Japan

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*Brassicae* are very important vegetables both in China and Japan. They are widely cultivated from ancient days. There are many excellent varieties, some of them are reported as new species by L. H. BAILEY. Yet wild species of *Brassica* have been found neither in China nor in Japan. Sometimes naturalized individuals found by native botanists in the course of the field observation, but they are considered by them as escaped ones. The writer of this report considers that *Brassicae* were introduced to China from the Mediterranean region in very olden times. If the chinese word "Feng" mentioned in the famous chinese classics, "Siking", means *B. Rapa*, its introduction to China was made in as far back as 500 B. C. or earlier than that. It is an acknowledged fact that *Brassicae* had already been cultivated in China by the third century. The writer here proposes a new classification on the ground of the history of the artificial selection of each race and of the number of chromosomes.

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|-----|--|--------------------|
| I   | Folia glauco-caerulea vel glauco-viridia, crassa. Calyx erecta clausa .....            | II                 |
|     | Folia atroviridia vel viridia, tenuia. Calyx plerumque patens. Annua vel biennis ..... | III                |
| II  | Petala 10—15 mm. longa, flava. Annua vel biennis. Chromosomata $n=19$ .....            | <i>B. Napus</i>    |
|     | Petala magna 10—25 mm. longa, albo-flavescens vel alba. Perennis. Chrom. $n=9$ .....   | <i>B. oleracea</i> |
| III | Folia caulina late amplexicaulia. Petala 9—12 mm. longa. Chrom. $n=10$ .....           | <i>B. Rapa</i>     |
|     | Folia caulina non amplexicaulia. Petala 6—9 mm. longa. Chrom. $n=10$ .....             | <i>B. juncea</i>   |

1 **Brassica juncea** (L.) CZERN. et COSS. in CZERN., *Conspect. pl. Chark.* (1859) 8. *Sinapis juncea* L. *B. Urbaniana* O. E. SCHULZ. *S. cernua* THUNB. *B. cernua* FORBES et HEMSL. *B. juncea* var. *mongolica*, var. *sareptana* SINSKAJA.

Nom. jap. Karashi (Honzowamei (918)), Karashina. Nom. Chin. Kie (Shennung Pentsao (452—526)), Kietsai.

Culta in zona temperata. China boreali, Korea, Japonia boreali.

var. **integrifolia** (STOKES) SINSKAJA in *Bull. Appl. Bot. & Pl. Breed.* XIX (1928) 339. *B. integrifolia* RUPR. *S. chinensis* & *takana* SIEB. *B. juncea* MAKINO (non COSS.). *B. j.* var. *subintegrifolia* SINSK.

Nom. jap. Takana (Honzowamei (918)). Nom. Chin. Takie, Chou-yeh-chieh (Pentsao-Kangmou (1578)).

Culta in zona calida. China austr. Japonia austr.

var. **foliosa** BAILEY in *Gentes Herb.* II (1930) 263.

Nom. jap. Setsuriko. Nom. chin. Suehlihung.

Culta in China media, in Japonia nuper introducta.

var. **sabellica** (PLENCK) KITAMURA comb. nov. *B. oleracea* var. *sabellica* PLENCK, *Ic. Pl. Med.* VI (1794) t. 532. *B. j.* var. *crispifolia* BAILEY (1922). *B. c.* var. *Chirimenna* MAKINO (1913). *B. j.* var. *subcrispifolia* SINSK. (1928.).

Nom. jap. Chirimenkarashi (Honzozufu (1841)). Nom. ang. Curled Mustard.

Culta raro in China et in Japonia.

var. **japonica** BAILEY in *Gentes Herb.* I (1922) 93. *S. japonica* THUNB. *B. nigra* var. *japonica* SCHLZ.

Nom. jap. Irana (Yamatohonzo (1709)). Nom. chin. Yinszuchieh, Latsai.

Culta in China media, Japonia.

var. **rugosa** (ROXB.) KITAM. comb. nov. *S. rugosa* ROXB., *Fl. Ind.* III (1832) 122. *B. rugosa* BAILEY.

Nom. chin. Tsing-tsai, Tasin-tsai etc.

Culta in China austr. Formosa, India.

var. **napiformis** (PAILL. et BOIS) KITAM. comb. nov. *S. j.* var. *napiformis* PAILL. et BOIS, *Potager d'un Curieux* 2 (1872) 372. *B. napiformis* BAILEY (1894).

Nom. chin. Hua-chieh (Chiwu-mingshi Tukao (1848)). Nom. ang. Tuberous-Rooted Mustard.

Culta in China boreali, in Japonia nuper introducta.

Recent cytogenetical studies suggest *B. juncea* (n=18) to have been derived from *B. Rapa* (n=10) and *B. nigra* (n=8). Probably *B. juncea* was produced in Central Asia and introduced to China.

*B. nigra* is not wild in China.

2 **Brassica Rapa** L., Sp. Pl. (1753) 666. *B. campestris* var. *rapa* BABINGTON (1843).

When *B. Rapa* L. and *B. campestris* L. are considered to be of the same species, the specific epithet for them must be *B. Rapa*, as METZGER named *B. campestris* as *B. rapa oleifera annua* in Syst. Bescher. Cult. Kohlart (1833), and KOCH called them both as *B. Rapa* in his Syn. Fl. Germ et Helv. (1835) 55.

var. **glabra** (SINSKAJA) KITAM. comb. nov. *B. campestris* subsp. *rapifera* var. *glabra* SINSK., l. c. 205 et var. *nudifolia* SINSK., l. c. Folia *glabra dentata*. Radix *alba tenera sparse fibrosa*.

Nom. jap. Busei (693 ex Nipponshoki), Kabura.

Culta in Japonia tota. Formae copiosae.

subvar. **Tokinashi** KITAM. nov.

Folia *glabra pinnatipartita*.

Culta in Japonia.

var. **Hakabura** KITAMURA var. nov.

Radix *alba depressa circ. 10 cm. diametro, 4 cm. alta, basi abrupte caudata, cauda circ. 6 cm. longa, fibrosa, apice caulibus copiosis caespitosis praedita*. Folia *numerosa glabra oblanceolata imparipinnatisecta*.

Nom. jap. Hakabura.

Culta in Japonia, praecipue in Kioto.

var. **Akana** (MAKINO) KITAM. comb. nov. *B. campestris* subsp. *Rapa* var. *Akana* MAKINO in Somoku Dusetsu Makino's ed. III (1913) 902.

Folia *obovato-lanceolata glabra dentata*. Radix *elongata superne purpurascens inferne alba*.

Nom. jap. Hinona vel Akana.

Culta in Japonia praecipue in Ohmi et Yamashiro.

subvar. **curvata** KITAMURA subvar. nov.

Radix *circ. 18 cm. longa circ. 5 cm. diametro, supra medium curvata epigaea, rubro-purpurascens, infra medium alba*. Folia *obovato-oblonga ampla breviter petiolata irregulariter dentata glabra*.

Nom. jap. Tsudakabu.

Culta in Japonia, praecipue in Tsudamura, prov. Idzumo.

var. **japonica** KITAM. nov.

Folia *glabra dentata, pinnatifida vel pinnatipartita*. Radix *rubra, tenera sparse fibrosa*.

Nom. jap. Akakabu.

Culta in Japonia. Formae copiosae.

var. **neosuguki** KITAM. nov. *B. Rapa* var. *perviridis* BAILEY in Gentes Herb. II (1930) 243 pro parte quoad pl. Namikawanae.

Radix obconica alba plus minus fibrosa 8—8.5 cm. diametro 17—20 cm. longa. Folia radicalia spatulata intense viridia glabra dentata vel lyratopinnatifida (f. **lyratopinnatifida**).

Nom. jap. Suguki.

Culta in Japonia, praecipue in Kioto.

*B. japonica* var. *Suigukina* MAKINO is an extinct race.

var. **nippoleifera** (MAKINO) KITAM. comb. nov. *B. c.* subsp. *Napus* var. *nippoleifera* MAKINO in Journ. Jap. Bot. VIII (1932) 10.

Nom. jap. Ochi (Honzowamei (918)), Hatakena (Honzokomoku-Keimo (1803)), Aburana (ibidem).

Culta in Japonia, praecipue prope Kioto.

var. **Mana** (MAKINO) KITAM. comb. nov. *B. c.* subsp. *Napus* var. *Mana* MAKINO in Journ. Jap. Bot. VIII (1932) 24.

Nom. jap. Mana.

Culta in Japonia, praecipue in Sendai.

var. **chinoleifera** (VIEHOEVER) KITAM. comb. nov. *B. campestris* var. *chinoleifera* VIEHOEVER in Journ. Agric. Res. XX (1920) 118, 136. *B. c.* var. *pamirica* SINSK. *B. c.* subsp. *Napus* var. *sinooleifera* MAKINO.

Nom. jap. Untai-aburana. Nom. chin. Yutsai.

Culta in China media, in Japonia nuper introducta.

var. **purpuraria** (BAILEY) KITAM. comb. nov. *B. c.* var. *purpuraria* BAILEY in Gentes Herb. II (1930) 248. *B. p.* BAILEY, 1. c. IV (1940) 330.

Nom. chin. Tzu-tsai-tai.

Culta in China media, in Japonia nuper introducta.

var. **perviridis** BAILEY, 1. c. II (1930) 243 pro maj. prte. *B. p.* BAILEY, 1. c. IV (1940) 328.

Nom. jap. Komatsuna.

Culta in Japonia praecipue prope Tokio.

var. **laciniifolia** (BAILEY) KITAM. comb. nov. *B. nipposinica* var. *laciniifolia* BAILEY in Gentes Herb. I (1922) 88. *B. Mizuna* SIEB. (1830) nom. seminud. *B. japonica* SIEB. nom. seminud. *B. japonica* MAKINO.

Nom. jap. Sensuji-mizuna, Mizuna (Yoshufushi (1683)).

Culta in Japonia tota sed copiosa in Kansai.

This race is supposed to have been raised in Kioto, probably from var. *nippoleifera*.

subvar. **oblanceolata** KITAM. nom. nov. *B. nipposinica* BAIL. 1. c. 86.

Nom. jap. Mizuna, Maruha.

Culta in Japonia tota, sed copiosa in Kansai.

subvar. **angustissima** KITAM. nov.

Folia radicalia copiosissima glabra linearia 3.5—40 cm. longa 12—13 mm. lata. Pedunculi longiores 2.5—3.3 cm. longi. Petala angustiora 10—11 mm. longa 3.5 mm. lata.

Culta in Japonia, praecipue in Kioto.

var. **Shigatsuna** (MAKINO) KITAM. comb. nov. *B. c.* subsp. *Napus*

var. *Shigatsuna* MAKINO in Journ. Jap. Bot. VIII (1932) 26.

Nom. jap. Shigatsuna vel Okutena.

Culta in Japonia, praecipue in Ohara prope Kioto endemica.

var. **chinensis** (L.) KITAM. comb. nov. *B. chinensis* L., Cent. Plant. 1 (1755) 19. *B. Napus* var. *c.* (L.) O. E. SCHULZ. *B. camp.* var. *c.* ITO. *B. c.* subsp. *Napus* var. *parachinensis* MAKINO (non BAILEY).

Nom. jap. Shakushina, Hoteina. Nom. chin. Petsai.

Culta in China media, in Japonia tota (introducenda in 1882).

subvar. **longipetiolata** KITAM. nov.

Folia longiora 45—50 cm. longa, petiolo 20—30 cm. longo erecto, lamina patente.

Nom. jap. Shirokuki-taisai. Nom. chin. Changkeng-Petsai.

Culta in China media, in Japonia introducenda in 1904.

var. **amplexicaulis** TANAKA et ONO, Useful Pl. Jap. (1895) 10 n. 49. *B. c.* subsp. *chinensis* var. *amplexicaulis* MAKINO. *S. pekinensis* LOUR. *B. p.* RUPR. *B. c.* subsp. *Napus* var. *p.* MAKINO.

Nom. jap. Shirakukina (Keiseizusetsu (1804)). Nom. chin. Su (Ming i pie lu (452—536)).

Culta in China tota, in Japonia.

subvar. **Pe-tsai** (BAILEY) KITAM. comb. nov. *B. Pe-tsai* BAILEY in Bull. 67, Cornell Univ. Agr. Exp. Sta. 178, 190 (1894).

Nom. jap. Hakusai. Nom. chin. Pe-tsai.

Culta in China bor. in Japonia introducenda in 1882.

subvar. **dentata** (MATSUM. et NAKAI) KITAM. comb. nov. *B. Petsai* var. *dentata* MATSUM. et NAKAI in Cat. Sem. Hort. Bot. Univ. Tokyo (1916) 13.

Nom. jap. Santosai.

Culta in Japonia.

subvar. **Toona** (MAKINO) KITAM. comb. nov. *B. c.* subsp. *chinensis* var. *Toona* MAKINO in Somoku Dusetsu MAKINO's ed. III (1913) 899.

Nom. jap. Mikawashimana.

Culta in Japonia, praecipue in Kanto.

subvar. *Hiroshimana* (MAKINO) KITAM. comb. nov. *B. c.* var. *Hiroshimana* MAKINO in Jour. Jap. Bot. V (1928) 48.

Nom. jap. Hiroshimana.

Culta in Japonia praecipue in Hiroshima.

subvar. **Osakana** (MAKINO) KITAMURA comb. nov. *B. c.* subsp. *Napus* var. *Osakana* MAKINO, l. c. VIII (1928) 25.

Nom. jap. Osakana.

Culta in Japonia, primum prope Osaka, nuper in Kansai copiosa.

var. **narinosa** (BAILEY) KITAM. comb. nov. *B. narinosa* BAILEY in Gentes Herb. I (1922) 99.

Nom. jap. Kisaragina. Nom. chin. Takutsai.

Culta in China media, in Japonia nuper introducta.

var. **Piaorh-tsai** KITAMURA nov.

Biennis. Radix valida angusta fibrosa. Folia radicalia atroviridia petiolata, lamina crassa sinuata crispata orbiculare patente in petiolum decurrente basi lobulata, petiolo erecto dilatato basi 5 cm. lato 9—10 cm. longo albo. Folia caulina late amplexicaulia. Siliqua brevis apice breviter rostrata.

Nom. jap. Hyojisai. Nom. chin. Piaorh-tsai, Uta-tsai.

Culta in China media, in Japonia nuper introducta.

var. **musaeifolia** (MAKINO) KITAM. comb. nov. *B. c.* var. *musaeifolia* MAKINO, l. c. V (1928) 48.

Nom. jap. Bashona.

Culta in Japonia, in Sendai endemica.

### 3 *Brassica oleracea* L., Sp. Pl. (1753) 667.

The varieties of this species were rather recently introduced to Japan. There are no old endemic variety. Var. *capitata* is cultivated widely since 1881, it has many excellent forms. Nom. Jap. Tamana, Kyabetsu. Nom. chin. Kuei-hua-peh-tsai (Chiwumingshi Tukao (1848)), vel Ye-tsai. Var. *acephala*; Nom. Jap. Habetan (Somoku-seiseigi (1778)), Orandana (Yamato-honzo (1709)). Var. *gongylodes*; Nom. Jap. Kabura-habetan, Orandana (Honzo-zufu (1841)). Var. *botrys*: Nom. Jap. Kwayasai, Hanahabetan. Var. *gemmifer*; Nom. Jap. Himekanran.

### 4 *Brassica Napus* L., Sp. Pl. (1753) 666.

This species is cultivated in Japan for the purpose of getting its oil, since 1887, has no old endemic variety.

Recent cytogenetical studies suggest *B. Napus* (n=19) to have been derived from *B. oleracea* (n=9) and *B. Rapa* (n=10).