

山形, 鳥取, 兵庫, 京都, 佐賀, 福岡, 大分, 長野県における マメ科植物遺伝資源の多様性保全 2007年

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Collection and Conservation of Leguminous Crops and Their Wild Relatives in Japan, 2007

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Summary

Legume plant genetic resources were the target for exploration in Yamagata prefecture from September 24 to 25, Tottori, Hyogo, Kyoto, Saga, Fukuoka, Ooita prefectures from October 22 to 25, and Nagano prefecture from November 5 to 6. As a result, 60 accessions of leguminous plants consist of 2 of *Glycine max*, 28 of *Glycine soja*, 7 of *Vigna angularis* var. *angularis*, 22 of *Vigna angularis* var. *nipponensis*, 1 of *Vigna unguiculata* were collected. An invited Bhutanese scientist, Ms. T. Asta joined the survey based on the MOU between NIAS and National Biodiversity Center, Bhutan.

Introduction

In order to conserve genetic diversity of Japanese leguminous crops and their wild relatives, 3 exploration trips were made in 2007. We focused on wild *Glycine* (soybean) and wild *Vigna* (azuki bean) genetic resources.

Methods

We surveyed Yamagata prefecture from September 24 to 25, Tottori, Hyogo, Kyoto prefectures from October 22 to 23, Saga, Fukuoka, Oita prefectures from October 24 to 25, and Nagano prefecture from November 5 to 6 by car as shown in Fig. 1. Seeds, herbarium specimens and root nodules (if available) were collected. Information on collection sites including village name, altitude, latitude, longitude, habitat, cultural practices and other ecological data of the collection sites were recorded as passport data (Table 2).

Results and Discussion

A total of 60 legume accessions including the genus *Vigna* and *Glycine*, consist of 2 of *Glycine max*, 28 of *Glycine soja*, 7 of *Vigna angularis* var. *angularis*, 22 of *Vigna angularis* var. *nipponensis*, 1 of *Vigna unguiculata* were collected. (Table 1 & 2).

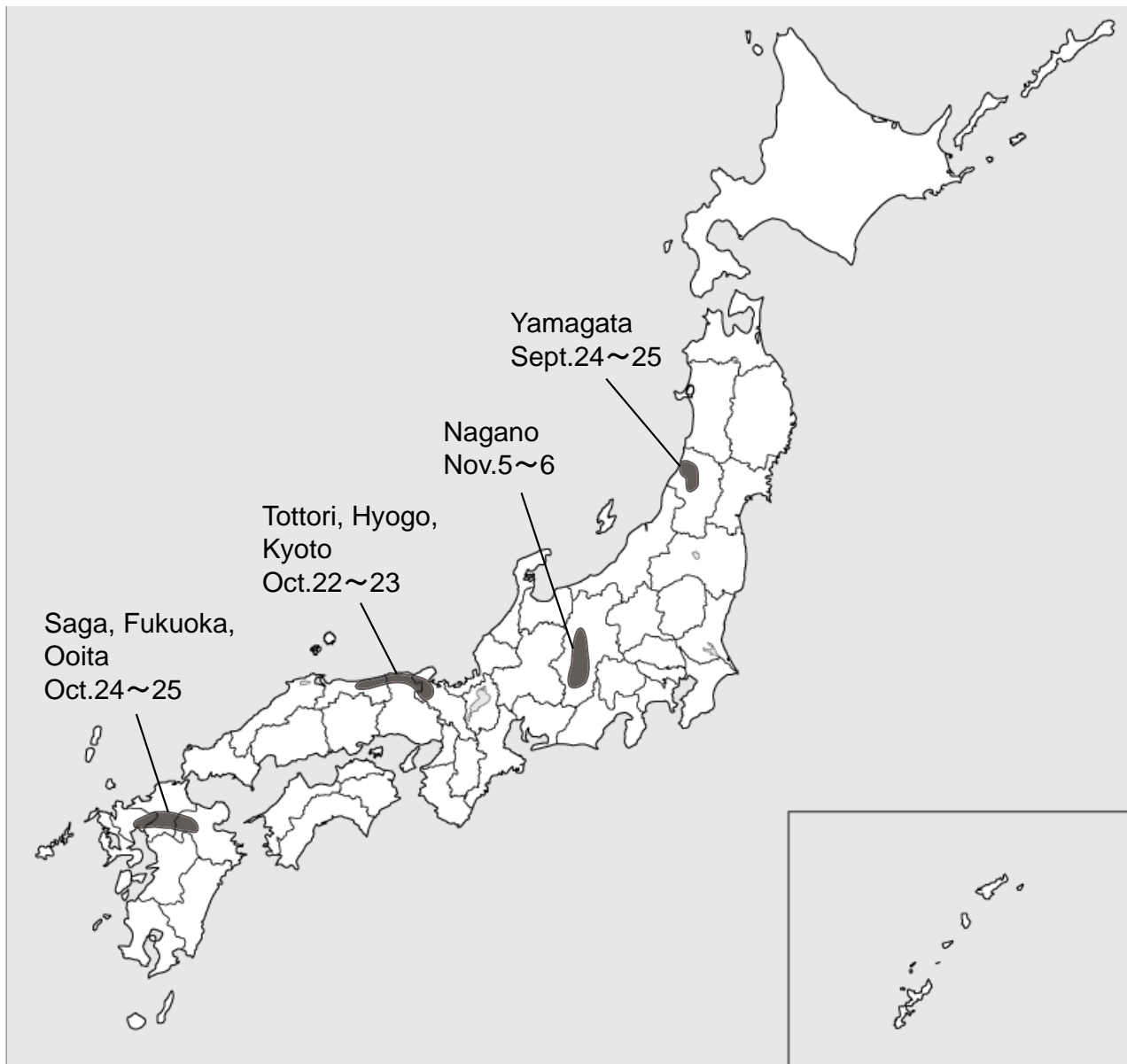


Fig. 1. A map of wild legume genetic resources collection sites in 2007.

(September 24 to 25, Yamagata)

In Yamagata prefecture, 15 accessions of wild soybean (*G. soja*), 4 of wild azuki bean (*V. angularis* var. *nipponensis*, including 2 intermediate populations), and 1 of cultivated azuki bean (*V. angularis* var. *angularis*) were collected. Most of wild soybean populations are still in the early maturing stage and we could not collect mature seeds from some of the populations. In contrast, it was a good season to collect mature seeds from wild azuki bean populations. A wild soybean individual with umbrella like arrangement of pods, which has an erect main stem, was found in 2007-03 population (Photos 1 & 2).

An intermediate morphological wild soybean individual which is thought to be a hybrid between cultivated and wild plants was found at 2007-08 site (Urushizone, Sakata, Fig. 2, Photos 3 & 4). The intermediate individual was growing between the river levee and soybean field and had 6 lateral branches and 58 pods. There were soybean fields in the vicinity. The distance between the intermediate plant and the nearest soybean field was about 10 m. We collected 39 individual leaf samples from this wild soybean population at 1 m intervals from both sides of the intermediate plant. We also collected leaf samples from soybean fields. We plan to analyze the genetic structure of this population in detail.

At 2007-09 (Yamadate) and 2007-10 (Narahashi) sites, intermediate (weedy) azuki bean populations were found. At Yamadate site, several weedy azuki bean plants were growing between the river and a soybean field. They showed indeterminate growth habit. One of these plants had small red seeds. Despite the small seed size this plant may have been an escaped plant from cultivation and was collected separately as 2007-09C. At Narahashi site, weedy azuki bean plants were growing in and around a fallow paddy field. Seed and pod sizes were significantly larger than typical wild azuki bean. Plant type variation (determinate and semi-indeterminate) was observed within the population.

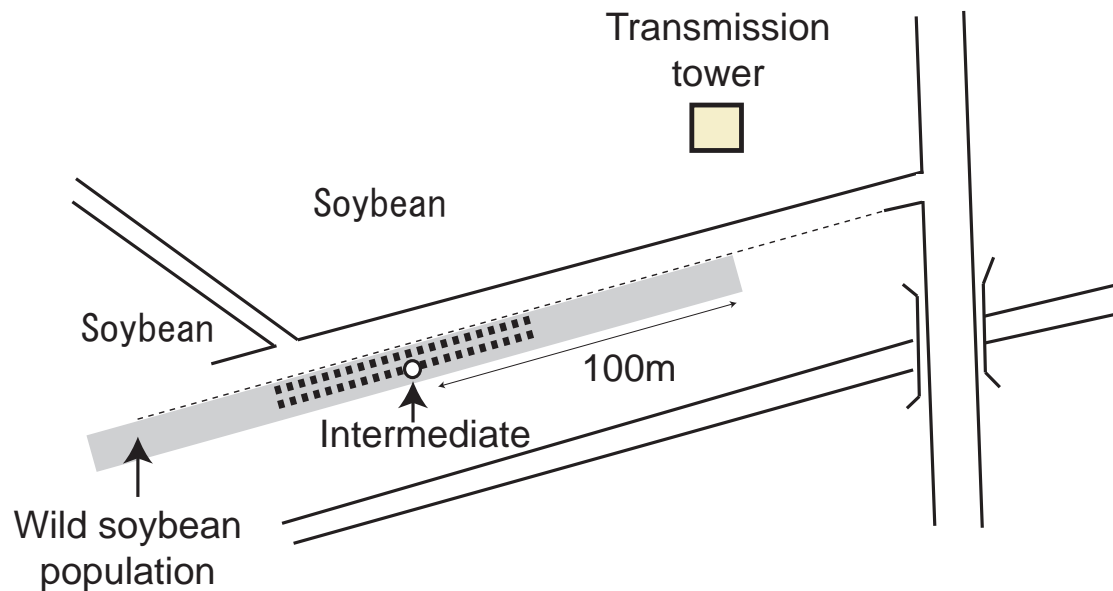


Fig. 2. A site where an intermediate morphological wild soybean individual was found (Urushizone, Sakata city, Yamagata prefecture). ○ indicates an intermediate soybean plant. ■ indicates wild soybean individuals from which leaf samples for DNA analysis were collected.

(October 22 to 23, Tottori, Hyogo, Kyoto)

In Tottori, Hyogo and Kyoto prefectures, 2 accessions of soybean, 6 of wild soybean, 6 of azuki bean, and 10 of wild azuki bean (including 2 intermediate accessions) were collected. Most of wild soybean populations are in the maturity stage, while most of wild azuki bean populations are in the past maturity stage. In the cultivated azuki bean fields in Kyotango city, Kyoto prefecture, one individual with black pods (2007Kyoto22-C) was found among white pod cultivars. This individual is thought to be a hybrid derivative with wild azuki bean. At this site, wild azuki bean and wild soybean also grow sympatrically (Photo 5). Two accessions of intermediate weedy azuki bean accessions were identified in a population (2007Hyogo24-A, Nakatakeda, Tanba-Ichijima) based on the seed color difference (black mottled and pale brown, Photo 6).

(October 24 to 25, Saga, Fukuoka, Ooita)

In Saga, Fukuoka and Ooita prefectures, 3 accessions of wild soybean, 5 of wild azuki bean (including 1 intermediate weedy accession) and 1 of cowpea (*Vigna unguiculata*) were collected. In a population of intermediate weedy azuki bean (2007Ooita25, Uchikawano, Hita city), plants with green stem were growing on the road side slope and had experienced cutting (clearing by human) at least once. Wild soybean individuals were growing abundantly on the ground of sand digging place of mountain (2007Fukuoka27, Yamae, Chikushino city). Wild soybean populations are frequently found in this type of newly opened ground of sand digging place on mountain. In a similar habitat at Saga prefecture (2007Saga28, Sonobe, Kiyama), wild soybean and wild azuki bean were found growing sympatrically. At site 2007Saga29, Kase town, both wild soybean and wild azuki bean population were found growing. This is a paddy field area on the reclaimed land from the sea of Ariake.

(November 5 to 6, Nagano)

In Nagano prefecture, Ina and Shimo-Ina areas were explored. Four accessions of wild soybean and 3 accessions of wild azuki bean (including 2 intermediate weedy populations) were collected. Most of wild populations (soybean and azuki bean) were at the past maturity stage. A wild soybean population was found growing beside experimental field of the Shinshu University (2007N2). Two intermediate weedy azuki bean populations were found at Sankouchi, Yasuoka village (2007N3) and at Nakahira, Iida city (2007N7, Photo 8). The weedy azuki bean plants had green stems at both sites. However, weedy plants at Sankouchi showed twining growth, while weedy plants at Nakahira showed erect growth habit (Photo 8).

和文摘要

本報告は,2007年9月24～25日に山形で,10月22～23日に鳥取,兵庫,京都で,10月24～25日に佐賀,福岡,大分で,11月5～6日に長野で行ったマメ科植物遺伝資源探索の報告である。結果として60点のマメ科植物遺伝資源を保存した。その内訳は,ダイズ2点,ツルマメ28点,アズキ7点,ヤブツルアズキ22点,ササゲ1点である。山形県酒田市漆曾根(2007-08)のツルマメ集団の中に,栽培ダイズとの交雑後代と考えられる中間体を1個体発見した。ダイズの中間体は,この1ヶ所で確認できただけであるが,アズキの中間体は,調査したすべての地域で高頻度に確認できた。山形以外の探索には,ブータン王国・王立生物多様性研究センターとの研究協定に基づいて招聘した T. Asta ジーンバンクマネージャーも参加した。

Table 1. Species and number of accessions collected in each region

日本各地の探索で収集した植物種と収集点数

Species 種名	No. of accessions collected in each region				Total 合計
	Saga, Fukuoka, Oita 佐賀・福岡・大分	Tottori, Hyogo, Kyoto 鳥取・兵庫・京都	Nagano 長野	Yamagata 山形	
<i>Glycine max</i> ダイズ	-	2	-	-	2
<i>Glycine soja</i> ツルマメ	3	6	4	15	28
<i>Vigna angularis</i> var. <i>angularis</i> アズキ	-	6	-	1	7
<i>Vigna angularis</i> var. <i>nipponensis</i> ヤブツルアズキ	5 (1)*	10 (2)*	3 (2)*	4 (2)*	22
<i>Vigna unguicualta</i> ササゲ	1	-	-	-	1
Total 合計	9	24	7	20	60

* number in the parenthesis indicates number of intermediate weedy accessions

Table 2. A passport data of collected materials in Japan

収集品のパスポートデータ

Coll. Date	Coll. No.	JP No.	Species name	Status	Collection Site (in Japanese)	Vill., City, Pref.	Latitude	Longitude
2007/9/24	COL/Yamagata/2007/NIAS/CED2007-01	233166	<i>Glycine soja</i>	wild	山形県鶴岡市播磨	Harima, Tsuruoka-shi, Yamagata	N38-46-10.9	E139-49-54.9
2007/9/24	COL/Yamagata/2007/NIAS/CED2007-02	233167	<i>Glycine soja</i>	wild	山形県東田川郡三川町猪子	Inoko, Mikawa-machi, Higashi Tagawa-gun, Yamagata	N38-49-23.6	E139-50-24.2
2007/9/24	COL/Yamagata/2007/NIAS/CED2007-03	233168	<i>Glycine soja</i>	wild	山形県酒田市坂野辺新田	Sakanobeshinden, Sakata-shi, Yamagata	N38-53-29.2	E139-49-56.8
2007/9/24	COL/Yamagata/2007/NIAS/CED2007-04	233169	<i>Glycine soja</i>	wild	山形県酒田市藤塚	Fujitsuka, Sakata-shi, Yamagata	N38-57-37.1	E139-51-26.0
2007/9/24	COL/Yamagata/2007/NIAS/CED2007-05	233170	<i>Glycine soja</i>	wild	山形県飽海郡遊佐町吉出	Yoshide, Yuza-machi, Akumi-gun, Yamagata	N39-01-44.1	E139-54-28.4
2007/9/24	COL/Yamagata/2007/NIAS/CED2007-06	233171	<i>Glycine soja</i>	wild	山形県飽海郡遊佐町吉出	Yoshide, Yuza-machi, Akumi-gun, Yamagata	N39-01-05.3	E139-56-18.4
2007/9/24	COL/Yamagata/2007/NIAS/CED2007-07	233172	<i>Glycine soja</i>	wild	山形県酒田市下黒川	Shimokurokawa, Sakata-shi, Yamagata	N38-59-42.1	E139-58-23.3
2007/9/24	COL/Yamagata/2007/NIAS/CED2007-08A	233173	<i>Glycine soja</i>	wild	山形県酒田市漆曽根	Urushizone, Sakata-shi, Yamagata	N38-55-30.4	E139-53-08.4
2007/9/24	COL/Yamagata/2007/NIAS/CED2007-08B	233622	<i>Glycine soja</i>	wild	山形県酒田市漆曽根	Urushizone, Sakata-shi, Yamagata	N38-55-30.4	E139-53-08.4
2007/9/24	COL/Yamagata/2007/NIAS/CED2007-09A	233174	<i>Vigna angularis</i> var. <i>nipponensis</i>	weedy	山形県酒田市山橋	Yamadate, Sakata-shi, Yamagata	N38-54-09.7	E139-56-09.7
2007/9/24	COL/Yamagata/2007/NIAS/CED2007-09B	233175	<i>Glycine soja</i>	wild	山形県酒田市山橋	Yamadate, Sakata-shi, Yamagata	N38-54-09.7	E139-56-09.7
2007/9/24	COL/Yamagata/2007/NIAS/CED2007-09C	233623	<i>Vigna angularis</i> var. <i>angularis</i>	escape	山形県酒田市山橋	Yamadate, Sakata-shi, Yamagata	N38-54-09.7	E139-56-09.7
2007/9/24	COL/Yamagata/2007/NIAS/CED2007-10 ①	233176	<i>Vigna angularis</i> var. <i>nipponensis</i>	wild	山形県酒田市榑橋	Narahashi, Sakata-shi, Yamagata	N38-53-46.5	E139-56-26.3
2007/9/24	COL/Yamagata/2007/NIAS/CED2007-10 ②	233624	<i>Vigna angularis</i> var. <i>nipponensis</i>	weedy	山形県酒田市榑橋	Narahashi, Sakata-shi, Yamagata	N38-53-46.5	E139-56-26.3
2007/9/24	COL/Yamagata/2007/NIAS/CED2007-10 ③	233625	<i>Vigna angularis</i> var. <i>nipponensis</i>	weedy	山形県酒田市榑橋	Narahashi, Sakata-shi, Yamagata	N38-53-46.5	E139-56-26.3
2007/9/24	COL/Yamagata/2007/NIAS/CED2007-11	233177	<i>Glycine soja</i>	wild	山形県東田川郡庄内町余目堤興屋	Amarume, Shounai-machi, Higashi Tagawa-gun, Yamagata	N38-51-49.6	E139-56-39.1
2007/9/24	COL/Yamagata/2007/NIAS/CED2007-12	233178	<i>Glycine soja</i>	wild	山形県酒田市山寺	Yamadera, Sakata-shi, Yamagata	N38-49-49.7	E139-58-16.7
2007/9/24	COL/Yamagata/2007/NIAS/CED2007-13	233179	<i>Glycine soja</i>	wild	山形県鶴岡市黒川	Kurokawa, Tsuruoka-shi, Yamagata	N38-40-30.4	E139-51-45.9
2007/9/24	COL/Yamagata/2007/NIAS/CED2007-14	233180	<i>Glycine soja</i>	wild	山形県鶴岡市羽黒町松尾	Matsuo, Haguro-machi, Tsuruoka-shi, Yamagata	N38-42-47.3	E139-51-38.7
2007/9/24	COL/Yamagata/2007/NIAS/CED2007-15	233181	<i>Glycine soja</i>	wild	山形県鶴岡市文下	Houdashi, Tsuruoka-shi, Yamagata	N38-46-16.4	E139-50-47.6
2007/10/22	COL/Hyogo/2007/NIAS/CED2007Hyogo16-A	233134	<i>Vigna angularis</i> var. <i>angularis</i>	cultivated	兵庫県美方郡新温泉町戸田	Heda, Shin-Onsencho, Mikata-gun, Hyogo	N35-37-2.34	E134-28-11.1
2007/10/22	COL/Hyogo/2007/NIAS/CED2007Hyogo16-B	233135	<i>Vigna angularis</i> var. <i>nipponensis</i>	wild	兵庫県美方郡新温泉町戸田	Heda, Shin-Onsencho, Mikata-gun, Hyogo	N35-37-2.34	E134-28-11.1
2007/10/22	COL/Kyoto/2007/NIAS/CED2007Kyoto17-A	233136	<i>Vigna angularis</i> var. <i>angularis</i>	cultivated	京都府京丹後市久美浜町甲山地区	Kouyama, Kumihama, Kyotango, Kyoto	N35-36-29.7	E134-55-24.72
2007/10/22	COL/Kyoto/2007/NIAS/CED2007Kyoto17-B	233137	<i>Vigna angularis</i> var. <i>nipponensis</i>	wild	京都府京丹後市久美浜町甲山地区	Kouyama, Kumihama, Kyotango, Kyoto	N35-36-29.7	E134-55-24.72
2007/10/22	COL/Kyoto/2007/NIAS/CED2007Kyoto17-C	233138	<i>Glycine max</i>	cultivated	京都府京丹後市久美浜町甲山地区	Kouyama, Kumihama, Kyotango, Kyoto	N35-36-29.7	E134-55-24.72
2007/10/22	COL/Kyoto/2007/NIAS/CED2007Kyoto17-D	233139	<i>Glycine soja</i>	wild	京都府京丹後市久美浜町甲山地区	Kabutoyama, Kumihama, Kyoto	N35-36-29.7	E134-55-24.72
2007/10/22	COL/Kyoto/2007/NIAS/CED2007Kyoto18-A	233140	<i>Glycine max</i>	cultivated	京都府京丹後市久美浜町関地区	Seki, Kumihama, Kyotango, Kyoto		
2007/10/22	COL/Kyoto/2007/NIAS/CED2007Kyoto18-B	233141	<i>Glycine soja</i>	wild	京都府京丹後市久美浜町関地区	Seki, Kumihama, Kyotango, Kyoto		
2007/10/23	COL/Hyogo/2007/NIAS/CED2007Hyogo19-A	233142	<i>Vigna angularis</i> var. <i>nipponensis</i>	wild	兵庫県豊岡市日高町藤井, 大目橋横	R1, Ohme bridge, Yashiro river, Fujii, Hidaka, Toyooka, Hyogo	N35-29-37.5	E134-46-58.5

Altitude (m)	Habitat	Shading	Disturbance	Population size	Growth stage	Soil	Seed	Herbarium	Nodule	Remarks
5	road side	open	high	15 x 20m	flowering -mature	-	yes	no	no	unused land (road side)
3	river bank	open	medium	50 x 100m	mature	sandy	yes	no	no	river bank of Akagawa, high density
1	river bank	open	medium	40 x 200m	mature	-	yes	no	no	river bank of Mogamigawa, narrow leaf, an umbrella like pods setting type individual found here
3	road side	open	medium	10 x 30m	mature	-	yes	no	no	unused land (road side)
2	beside railroad	open	high	1 x 200m	mature	gravel	yes	no	no	unused land (road side)
2	hilly open place	open	medium	15 x 40m	mature	-	yes	no	no	fallow field (margin)
10	river bank	open	medium	10 x 10m	mature	-	yes	no	no	
2	river bank	open	medium	3 x 100m	mature	-	yes	no	no	normal seed size, a plant with intermediate morphology between wild and cultivated found here
2	river bank	open	medium	3 x 100m	mature	-	yes	no	no	large seed size
10	river side	open	medium	5 x 1m	mature - past mature	-	yes	no	no	weedy type
10	river side	open	medium	5 x 3m	mature - past mature	-	yes	no	no	wild type
10	river side	open	medium	-	mature - past mature	-	yes	no	no	probably escaped from cultivation
12	river bank	open	medium	3 x 3m	flowering -mature - past mature	-	yes	no	no	beside rice field, wild type
12	river bank	open	medium	3 x 30m	flowering -mature - past mature	-	yes	no	no	weedy type
12	river bank	open	medium	3 x 30m	flowering -mature - past mature	-	yes	no	no	weedy type
8	river bank	open	medium	50 x 50m	mature	-	yes	no	no	beside Mogamigawa
8	river bank	open	medium	2 x 100m	mature	-	yes	no	no	low density
48	river bank	open	medium	3 x 3m	mature	-	yes	no	no	beside Akagawa
48	river bank	open	medium	5 x 2m	mature	-	yes	no	no	beside Akagawa
46	river bank	open	medium	10 x 3m	mature	-	yes	no	no	abandoned place beside Akagawa, umbrella like pods setting type individuals found here
5	farmer's field	open	medium	10 x 5m	mature	-	yes	yes	no	
5	river bank	open	medium	2 x 5m	mature - past maturity	-	yes	yes	yes	
1	farmer's field	open	high	-	mature	-	yes	no	no	cv. Kyoto Dainagon
1	beside field	open	high	10 x 1m	mature	-	yes	no	no	short pods
1	farmer's field	open	high	-	mature	-	yes	no	no	cv. Shin Tanbaguro, flowering time: 8/5 ~ 1 month, Soy 2 years - Rice 2 years rotation
1	beside field	open	high	50 x 2m	mature	-	yes	no	no	
-	farmer's field	open	high	-	mature	-	yes	no	no	
-	beside field	open	high	-	mature	-	yes	no	no	
18	river bank bushes beside paddy	light	low	triangle shaped place, 750m ² (50m x 30m ÷ 2)	past maturity	-	yes	yes	yes	10 ~ 12 seeds/pod, short pod

Table 2 (Continued).

Coll.Date	Coll. No.	JP No.	Species name	Status	Collection Site (in Japanese)	Vill., City, Pref.	Latitude	Longitude
2007/10/23	COL/Hyogo/2007/NIAS/ CED2007Hyogo19-B	233143	<i>Vigna angularis</i> var. <i>nipponensis</i>	wild	兵庫県豊岡市日高町 藤井, 大目橋横	R1, Ohme bridge, Yashiro river, Fujii, Hidaka, Toyooka, Hyogo	N35-29-37.5	E134-46-58.5
2007/10/23	COL/Hyogo/2007/NIAS/ CED2007Hyogo20-A	233144	<i>Vigna angularis</i> var. <i>nipponensis</i>	wild	兵庫県豊岡市竹野町 桑野本 (県道 135 号)	R135, Kuwanomoto, Takeno, Toyooka, Hyogo	N35-33-28.74	E134-40-51.42
2007/10/23	COL/Hyogo/2007/NIAS/ CED2007Hyogo20-B	233145	<i>Glycine soja</i>	wild	兵庫県豊岡市竹野町 桑野本 (県道 135 号)	R135, Kuwanomoto, Takeno, Toyooka, Hyogo	N35-33-28.74	E134-40-51.42
2007/10/23	COL/Kyoto/2007/NIAS/ CED2007Kyoto21-A	233146	<i>Vigna angularis</i> var. <i>nipponensis</i>	wild	京都府京丹後市峰山町 新治, 三軒屋橋横	Ninbari, Mineyama, Kyotango, Kyoto	N35-36-22.44	E135-03-15.3
2007/10/23	COL/Kyoto/2007/NIAS/ CED2007Kyoto21-B	233147	<i>Vigna angularis</i> var. <i>angularis</i>	cultivated	京都府京丹後市峰山町 新治, 三軒屋橋横	Ninbari, Mineyama, Kyotango, Kyoto	N35-36-22.44	E135-03-15.3
2007/10/23	COL/Kyoto/2007/NIAS/ CED2007Kyoto21-C	233148	<i>Glycine soja</i>	wild	京都府京丹後市峰山町 新治, 三軒屋橋横	Ninbari, Mineyama, Kyotango, Kyoto	N35-36-22.44	E135-03-15.3
2007/10/23	COL/Kyoto/2007/NIAS/ CED2007Kyoto22-A	233149	<i>Vigna angularis</i> var. <i>nipponensis</i>	wild	京都府京丹後市丹後町 宮竹野沖田	Miya, Tango, Kyotango, Kyoto	N35-43-5.28	E135-06-12.96
2007/10/23	COL/Kyoto/2007/NIAS/ CED2007Kyoto22-B	233150	<i>Vigna angularis</i> var. <i>angularis</i>	cultivated	京都府京丹後市丹後町 宮竹野沖田	Miya, Tango, Kyotango, Kyoto	N35-43-5.28	E135-06-12.96
2007/10/23	COL/Kyoto/2007/NIAS/ CED2007Kyoto22-C	233151	<i>Vigna angularis</i> var. <i>angularis</i>	cultivated	京都府京丹後市丹後町 宮竹野沖田	Miya, Tango, Kyotango, Kyoto	N35-43-5.28	E135-06-12.96
2007/10/23	COL/Kyoto/2007/NIAS/ CED2007Kyoto22-D	233152	<i>Glycine soja</i>	wild	京都府京丹後市丹後町 宮竹野沖田	Miya, Tango, Kyotango, Kyoto	N35-43-5.28	E135-06-12.96
2007/10/23	COL/Kyoto/2007/NIAS/ CED2007Kyoto23-A	233153	<i>Vigna angularis</i> var. <i>nipponensis</i>	wild	京都府福知山市大江町 千原村, 県道 55 号沿い	Senbara, Oe, Fukuchiyama, Kyoto	N35-22-47.22	E135-9-28.8
2007/10/23	COL/Kyoto/2007/NIAS/ CED2007Kyoto23-B	233154	<i>Glycine soja</i>	wild	京都府福知山市大江町 千原村, 県道 55 号沿い	Senbara, Oe, Fukuchiyama, Kyoto	N35-22-47.22	E135-9-28.8
2007/10/23	COL/Hyogo/2007/NIAS/ CED2007Hyogo24- A(black mottled seed)	233155	<i>Vigna angularis</i> var. <i>nipponensis</i>	weedy	兵庫県丹波市市島町中 竹田, 安下橋横	Nakatakeda, Ichijima, Tanba, Hyogo	N35-14-23.22	E135-07-55.02
2007/10/23	COL/Hyogo/2007/NIAS/ CED2007Hyogo24- A(pale brown seed)	233621	<i>Vigna angularis</i> var. <i>nipponensis</i>	weedy	兵庫県丹波市市島町中 竹田, 安下橋横	Nakatakeda, Ichijima, Tanba, Hyogo	N35-14-23.22	E135-07-55.02
2007/10/23	COL/Hyogo/2007/NIAS/ CED2007Hyogo24-B	233156	<i>Vigna angularis</i> var. <i>angularis</i>	cultivated	兵庫県丹波市市島町中 竹田, 安下橋横	Nakatakeda, Ichijima, Tanba, Hyogo	N35-14-23.22	E135-07-55.02
2007/10/24	COL/Ooita/2007/NIAS/ CED2007Ooita25	233157	<i>Vigna angularis</i> var. <i>nipponensis</i>	weedy	大分県日田市内河野, 柳又発電所横	Uchikawano, Hita, Ooita	N33-18-18.18	E130-53-7.86
2007/10/24	COL/Fukuoka/2007/ NIAS/ CED2007Fukuoka26	233158	<i>Vigna angularis</i> var. <i>nipponensis</i>	wild	福岡県朝倉市山見, 県 道 80 号横	Yamami, Asakura, Fukuoka	N33-27-0.72	E130-42-5.64
2007/10/24	COL/Fukuoka/2007/ NIAS/ CED2007Fukuoka27	233159	<i>Glycine soja</i>	wild	福岡県筑紫野市山家, 下西山バス停横採石場 (県道 200 号)	Yamae, Chikushino, Fukuoka	N33-30-7.92	E130-35-41.28
2007/10/24	COL/Saga/2007/NIAS/ CED2007Saga28-A	233160	<i>Vigna angularis</i> var. <i>nipponensis</i>	wild	佐賀県三養基郡基山町 園部, 県道 137 号二瀬 川橋横採石場	Sonobe, Kiyama, Miyaki-gun, Saga	N33-25-31.68	E130-29-32.82
2007/10/24	COL/Saga/2007/NIAS/ CED2007Saga28-B	233161	<i>Glycine soja</i>	wild	佐賀県三養基郡基山町 園部, 県道 138 号二瀬 川橋横採石場	Sonobe, Kiyama, Miyaki-gun, Saga	N33-25-31.68	E130-29-32.82
2007/10/24	COL/Saga/2007/NIAS/ CED2007Saga28-C	233162	<i>Vigna unguiculata</i>	cultivated	佐賀県三養基郡基山町 園部, 県道 139 号二瀬 川橋横採石場	Sonobe, Kiyama, Miyaki-gun, Saga	N33-25-31.68	E130-29-32.82
2007/10/25	COL/Saga/2007/NIAS/ CED2007Saga29-A	233163	<i>Vigna angularis</i> var. <i>nipponensis</i>	wild	佐賀県佐賀市嘉瀬町 十五 (六字), 干拓地, 下水浄化センター近く	Kase, Saga, Saga	N33-12-6.84	E130-15-22.14
2007/10/25	COL/Saga/2007/NIAS/ CED2007Saga29-B	233164	<i>Glycine soja</i>	wild	佐賀県佐賀市嘉瀬町 十五 (六字), 干拓地, 下水浄化センター近く	Kase, Saga, Saga	N33-12-19.02	E130-15-31.2
2007/10/25	COL/Saga/2007/NIAS/ CED2007Saga29-C	233165	<i>Vigna angularis</i> var. <i>nipponensis</i>	wild	佐賀県佐賀市嘉瀬町 十五 (六字), 干拓地, 下水浄化センター近く	Kase, Saga, Saga	N33-12-19.02	E130-15-31.2
2007/11/5	COL/Nagano/2007/ NIAS/CED2007N1	233182	<i>Glycine soja</i>	wild	長野県, 伊那市南箕輪 村小黒川/パーキングエ リア横の金網	Ogurogawa, Minami Minowa Vill., Ina City, Nagano	N35-50-27.0	E137-55-54.3
2007/11/5	COL/Nagano/2007/ NIAS/CED2007N2	233183	<i>Glycine soja</i>	wild	長野県, 伊那市南箕輪 村, 信州大学の圃場横	Shinshu Univ., Minami Minowa, Ina, Nagano	N35-51-40.9	E137-56-20.2
2007/11/6	COL/Nagano/2007/ NIAS/CED2007N3	233184	<i>Vigna angularis</i> var. <i>nipponensis</i>	weedy	長野県泰阜村三耕地, 福寿院下	Sankouchi, Yasuoka Vill., Nagano	N35-23-29.6	E137-51-03.9
2007/11/6	COL/Nagano/2007/ NIAS/CED2007N4	233185	<i>Vigna angularis</i> var. <i>nipponensis</i>	wild	長野県阿南町大下条, 赤い屋根の保育園の前	Ohshimojo, Anan town, Nagano	N35-19-24.9	E137-48-49.2
2007/11/6	COL/Nagano/2007/ NIAS/CED2007N5	233186	<i>Glycine soja</i>	wild	長野県下條村睦沢, 県 道 64 号沿い土砂採集 場付近	Mutsuzawa, Shimojo- Vill., Nagano	N35-24-27.6	E137-46-55.0
2007/11/6	COL/Nagano/2007/ NIAS/CED2007N6	233187	<i>Glycine soja</i>	wild	長野県飯田市中平	Nakahira, Iida City, Nagano	N35-27-39.3	E1137-45-06.4
2007/11/6	COL/Nagano/2007/ NIAS/CED2007N7	233188	<i>Vigna angularis</i> var. <i>nipponensis</i>	weedy	長野県飯田市中平	Nakahira, Iida City, Nagano	N35-27-39.3	E1137-45-06.4

Altitude (m)	Habitat	Shading	Disturbance	Population size	Growth stage	Soil	Seed	Herbarium	Nodule	Remarks
18	river bank bushes beside paddy	light	low	5 x 2m	past maturity	-	yes	yes	yes	larger leaves, possibility of introgression
138	fallow field	open	med - low	sporadically	past maturity	-	yes	yes	yes	fallow field (margin) and beside road
138	fallow field	open	med - low	sporadically	mature	-	yes	yes	yes	fallow field (margin) and beside road
36	river side bushes	open	medium	5 x 5m	past maturity	-	yes	no	no	ca. 10-11 seeds/pod
36	river side bushes	open	medium		-	-	yes	no	no	
36	river side bushes	open	medium	2 x 2m	mature	-	yes	no	no	
3	beside road	open	high	5 x 3m	past maturity	-	yes	no	yes	
3	cultivated field	open	high	-	-	-	yes	no	no	white pod
3	cultivated field	open	high	-	-	-	yes	no	no	brown pod, could be introgressed individual
3	river bank	open	high	200 x 1m	mature	-	yes	no	yes	
6	river side	open	high	10 x 1m	mature	-	yes	no	no	beside Yura river (R55), pod 5 ~ 6 cm, 12 seeds
6	river side	open	high	10 x 2m	mature	-	yes	no	no	beside Yura river (R55),
46	bushes	open	medium	30 x 50m	mature	-	yes	yes	no	abandoned place, seeds are small, Green stem + purple stem mixed, Black mottled seeded samples separated from mixed sample (CED2007Hyogo24-A).
46	bushes	open	medium	30 x 50m	mature	-	yes	yes	no	abandoned place, seeds are small, Green stem + purple stem mixed, Pale brown seeded samples separated from mixed sample (CED2007Hyogo24-A).
46	cultivated field	open	medium	30 x 50m	mature	-	yes	yes	no	
93	road side slope	open	high	5 x 2m	flowering - mature - past maturity	-	yes	yes	yes	slope 20 ~ 30°, edge of road to stone wall, bracts, bracteole heavily hairy, bracteole much longer than carlyx. Green stem. 10 seeds/pod. Plants germinated after weeding. Some plants showed semi-indeterminate growth. Area least once cleared, stem nearly erect.
93	terraced paddy field	light - open	none	-	mature	-	yes	yes	no	slope 80°, stone wall of terraced paddy field, stem nearly glabrous
146	grassland	open	high	-	mature - past maturity	sandy	yes	no	no	growing abundantly on the ground of sand digging place of mountain, narrow leaflets
130	grassland	open	high	a few plants	past maturity	sandy	yes	no	no	mountain gravel digging place
130	grassland	open	high	-	mature	sandy	yes	no	no	mountain gravel digging place
130	farmer's field	open	high	5 x 10m	maturing	sandy	yes	no	no	farmer's field beside mountain gravel digging place
0	beside soybean field	open	high	several plants	flowering - mature	-	yes	yes	yes	slope: 10°, field (soybean) margin, bracteole long and hairy, secondary bract large and hairy
0	beside irrigation canal	open	high	5 x 1m	flowering - mature	-	yes	no	no	slope: 10°
0	beside irrigation canal	open	high	several plants	flowering - mature	-	yes	no	no	beside drainage, larger leaves and longer pods compared with 29-A
736	grassland	open	medium	5 x 1m	past maturity	-	yes	no	no	climbing on the fence of Ogurogawa Parking Area of Chuo Highway
756	beside field	open	medium	several plants	past maturity	-	yes	no	no	climbing on the fence of experimental fields in Shinshu University
699	grassland	light	medium	many plants	past maturity	clay	yes	yes	yes	slope: 0 ~ 30°, beside paddy (slope), large seeds, stem green
528	beside path in paddy field	light	high	many plants	past maturity	clay	yes	yes	no	paddy field, 10 ~ 12 seeds/pood, stem purple, lobed leaflet, rather short pod, stem nearly hairless
518	road side	light	high	several plants	past maturity	-	yes	no	no	
598	waste land beside road	light	medium	many plants	past maturity	-	yes	no	no	
598	waste land beside road	light	medium	several plants	past maturity	-	yes	yes	yes	stem green, erect growth habit



Photo 1. A wild soybean individual (*Glycine soja*) with umbrella like arrangement of pods found at 2007-03 site (Sakata city, Yamagata prefecture).



Photo 2. A wild soybean individual (*Glycine soja*) with umbrella like arrangement of pods and few lateral branches. Most of pods are on main stem.

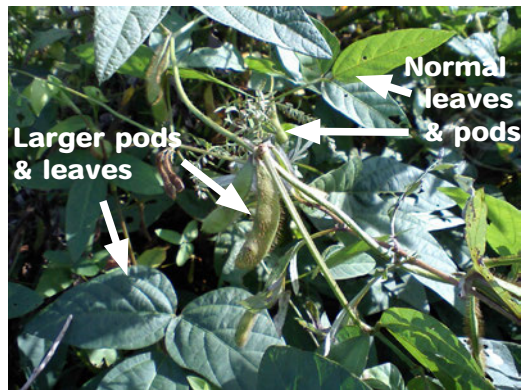


Photo 3. An individual with larger leaves and pods found among wild soybean (*G. soja*) population (2007-08) at Sakata city, Yamagata prefecture.



Photo 4. Plant type of a naturally growing soybean individual with larger leaves and pods (2007-08 site). This type may be hybrid derivative.



Photo 5. Wild azuki bean (left) and wild soybean (right) sometimes grow sympatrically in Japan (2007-22 site, Miya, Kyotango city, Kyoto prefecture).



Photo 6. Variation in seed color and size within a naturally growing weedy azuki bean population (2007-24 site, Nakatakeda, Tanba-Ichijima, Hyogo prefecture).



Photo 7. A road side population of wild soybean (*G. soja*) found at Shimojo village, Nagano prefecture (2007N5).



Photo 8. Erect plant type of weedy azuki bean found in waste land beside road (Nakahira, Iida city, Nagano prefecture, 2007N7).