

日本における作物近縁野生種の保存：*Vigna* 属  
5. 山口，広島，岡山，愛知，静岡の探索 1998年10月22日～10月27日

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Wild relatives of crops conservation in Japan with a focus on *Vigna* spp.  
5. Collecting mission in Yamaguchi, Hiroshima, Okayama,  
Aichi and Shizuoka prefectures. 22<sup>nd</sup> ~ 27<sup>th</sup> October 1998

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摘要

ここでは、野生アズキを収集するための一連の探索のうち、福岡からつくばまで山陽地方と東海地方で行った調査について報告する。探索は1998年10月22日から27日にかけて行った。山陽地方では、数多くの場所で車を止めて探索を行ったが、野生アズキ集団を発見することができなかった。この地域での野生アズキの密度は低いと思われた。一方、愛知県に入ると3地点でアズキ野生種集団を発見できた。野生ダイズは、探索を行ったどの地域でも普通に見られた。

本探索によって、17点の植物遺伝資源を収集した。そのうち、野生アズキ3集団、ツルアズキ1集団、野生ダイズ6集団からは、個体別に種子を収集した。また、ほとんどの地点で根粒を収集し、植物標本も作成した。

Summary

Wild legume genetic resources was the focus of a collecting trip in Yamaguchi (山口県), Hiroshima (広島県), Okayama (岡山県), Aichi (愛知県) and Shizuoka (静岡県) prefectures between 22<sup>nd</sup> and 27<sup>th</sup> October 1998. Along the south coastal region of southern Honshu (本州) we stopped in many locations and only found wild soybeans. Wild *Vigna* was not found. Only one plant of weedy azuki, possibly an escape from cultivation, was collected in Yamaguchi (山口県) prefecture. Small seeded local cultivars of azuki bean (*V. angularis*) and rice bean (*V. umbellata*) were found. In contrast to Yamaguchi (山口県) and Hiroshima (広島県) prefectures in Shizuoka (静岡県) prefecture wild *Vigna* was found in 3 locations. In contrast to wild *Vigna*, wild soybeans (tsurumame, *Glycine soja*) was commonly found throughout the trip. The difference between the distribution of

these two species is unclear.

A total of 17 populations were collected. In addition, 88 single plant samples were collected from 3 populations of *V. angularis* var. *nipponensis*, 1 population of *V. umbellata* and 6 populations of *Glycine soja* (Table below). In most cases root nodule and herbarium samples were obtained.

#### 収集品の内訳

Species	Populations (plants) sampled
<i>Vigna angularis</i> var. <i>nipponensis</i>	3 (27)
<i>V. angularis</i> var. <i>angularis</i> (weedy)	1 (1)
<i>V. angularis</i> var. <i>angularis</i> (cultigen)	1
<i>V. umbellata</i> (cultivated)	1 (11)
<i>Glycine soja</i>	9 (49)
<i>Echinochloa utilis</i>	1
<i>Cassia tora</i>	1

KEYWORDS: wild legume genetic resources; *Vigna* sp., *Glycine soja*

#### Field observations 探索の経路と生育地での特徴

The collecting mission from Fukuoka (福岡) along southern Honshu(本州) as far as Osaka(大阪) was notable for the difficulty the team had in finding wild and weedy azuki. Wild soybeans, however, were common throughout. While there are many places where wild azuki might have been expected the Japan inland sea coast (瀬戸内海沿岸：山陽地方) is very built up with residential areas and industrial zones. The coastal plain is very narrow. This is in contrast to the northern coast of southern Honshu(本州：山陰地方) which has lower human population and less industry, perhaps, as a consequence many populations of wild or weedy azuki were found there (See Tomooka et al. this volume). Consequently the collecting team found no populations of wild *Vigna angularis*. Only one individual was found of weedy azuki in an overgrown waste land habitat at Kiriyaama (切山), Yamaguchi (山口県).

In contrast to the initial stage of the mission. After Osaka (大阪) in Shizuoka (静岡県) prefecture *Vigna angularis* var. *nipponensis* was found in several locations.

At Iwakuni (岩国), Yamaguchi (山口県) prefecture, we sampled a small seeded landrace of cultivated azuki bean. We were told there are three cultivars in the area one with black pods, one with light brown pods and one with black mottled seeds. The cultivar we collected had black pods with small red oblong seeds. Local farmers said that the harvest of azuki beans was particularly bad this year due to heavier than normal rainfall. One farmer showed us her crop from which nothing could be harvested.

At Kudamatsu (下松), Yamaguchi (山口県) prefecture, a small field of rice bean, *Vigna umbellata* was found in a semi-shaded terrace on a hill side above rice terraces(Fig. 1). This bean had already been partially harvested by the farmer. But the team found several late maturing plants in the field. Unfortunately the farmer could not be found to inquire about the uses this bean is put to and cultivation practices.

Wild soybean was collected throughout the mission. One feature of wild and cultivated soybean in Japan is that weedy soybean has not been clearly recognized and described. The weedy soybean of China called "*gracilis*" is generally a determinate plant. Indeterminate plant type is often a characteristic of weedy azuki bean. However, in Japan such a small seeded determinate weedy soybean has not been found during these collecting missions. However, we have been told that weedy soybean does exist in Japan based on collections received several years ago from a national survey (K. Kitamura, personal communication). During this collecting trip at Hongou (本郷) Yamaguchi (山口県) an unusually large seeded wild soybean was found (CED98078). It had smooth black seeds and was indeterminate and spread widely on a riverside embankment adjacent to allotments (home gardens). At the same location other plants of wild soybean had smaller brown seeds with a bloom (CED98079). A comparison of the seed weight of the different populations shows that the smooth black seeded population 10 seed weight was 0.52g and that of the typical wild soybean was only 0.33g. It seems likely that the larger black seeded population is a weedy type of soybean in Japan. Many cultivated hay type soybeans that were formerly commonly cultivated in, for example the U.S., are indeterminate and have small black seeds rather similar to CED98078.

During the collecting missions it has been noticeable that *G. soja* is much more abundant than *V. angularis* var. *nipponensis*. However, in some areas *V. angularis* var. *nipponensis* is as abundant *G. soja*. In our field plantings of these two species in Tsukuba *V. angularis* var. *nipponensis* is much slower growing and appears to be readily infected with virus at an early stage compared to *G. soja*. Thus the absence of *V. angularis* var. *nipponensis* in built up areas of Japan may be that *G. soja* is more resilient than *V. angularis* in disturbed environments. It may also be that in Japan *V. angularis* is at the northern extreme of its distribution whereas *G. soja* occurs at more northern locations

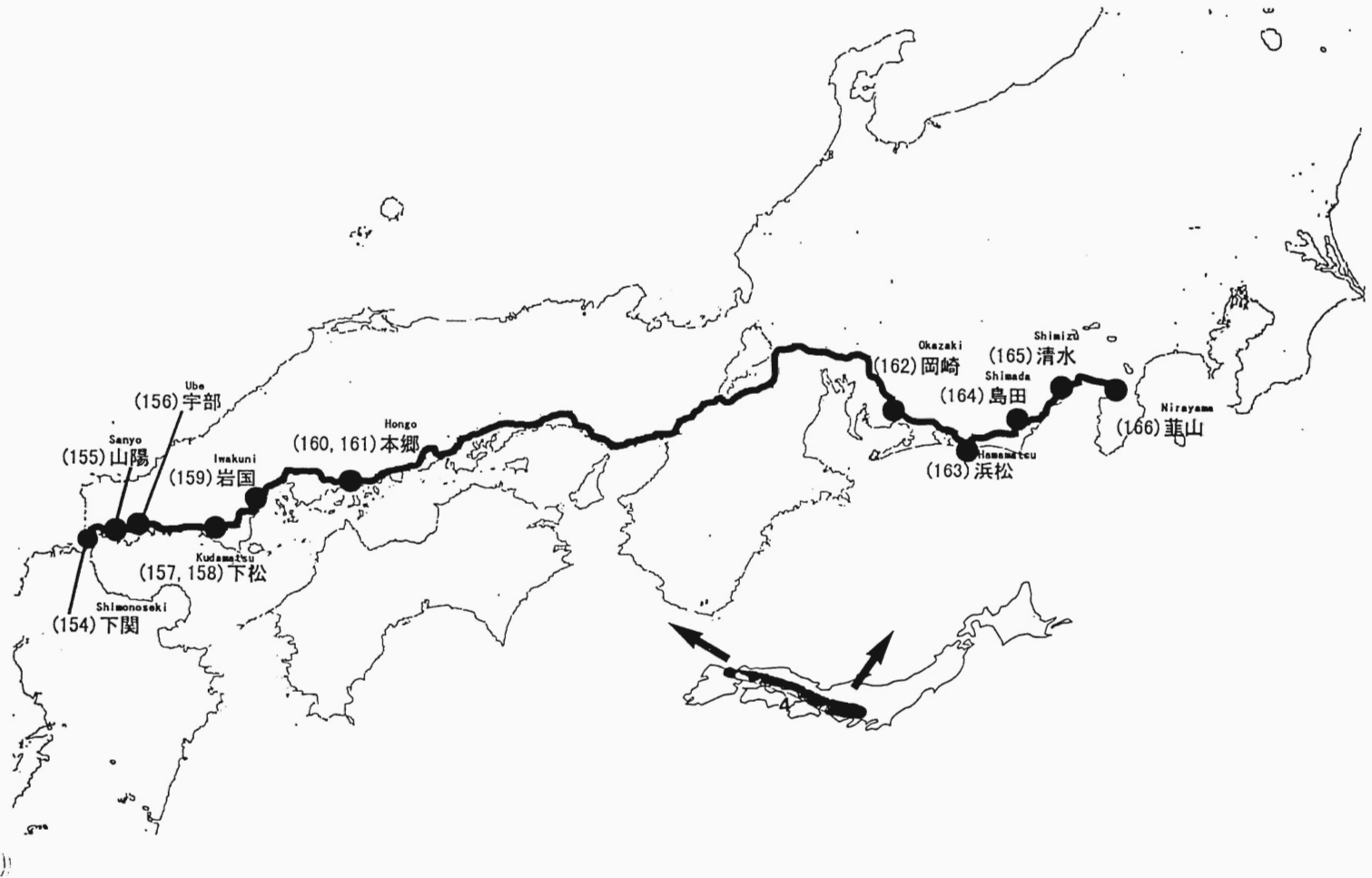
At Nagatomo (長友), Yamaguchi (山口県), several fields of cultivated *Echinochloa utilis* (CED98070) were found. This cultigen is not commonly seen it is generally grown for bird seed.

Table 1 Itinerary of the exploration and the collected samples on each day  
探索収集日程と収集品の数

Date 日付	Itinerary and collection sites number 行程と収集地点番号	Collected species and number of accessions 収集した種と系統数
10/22(Thurs)	Yamaguchi 山口 県 Shimonoseki 下関 市 --- 154 --- Sanyou 山陽 Ube 宇部 市 --- 155 --- 宇部市 --- 156	<i>Glycine soja</i> 2 <i>Echinochloa utilis</i> 1
10/23(Fri)	Kudamatsu 下松 市 --- 157, 158 --- Iwakuni 岩国 市 --- 159	<i>Vigna umbellata</i> 1 <i>Cassia tora</i> 1 <i>V. angularis</i> var. <i>angularis</i> (weedy) 1 <i>V. angularis</i> var. <i>angularis</i> (cult.) 1 <i>G. soja</i> 1
10/24(Sat)	Hongou 本郷 町 --- 160, 161	<i>Glycine soja</i> 3
10/25(Sun)	Aichi 愛知県 Okazaki 岡崎 市 --- 162	<i>Glycine soja</i> 1
10/26(Mon)	Shizuoka 静岡県 Hamamatsu 浜松 市 --- 163 --- Shimada 島田 市 - -- 164 Shimizu 清水 市 --- 165	<i>G. soja</i> 1 <i>V. angularis</i> var. <i>nipponensis</i> 3
10/27(Tue)	Nirayama 韮山 町 --- 166	<i>G. soja</i> 1
Total		<i>Glycine soja</i> 9 <i>Echinochloa utilis</i> 1 <i>Vigna umbellata</i> 1 <i>Cassia tora</i> 1 <i>V. angularis</i> var. <i>angularis</i> (weedy) 1 <i>V. angularis</i> var. <i>angularis</i> (cult.) 1 <i>V. angularis</i> var. <i>nipponensis</i> 3 Total : 17 samples from 13 sites

Table 2 A list of collected samples in Yamaguchi, Hiroshima, Okayama and Shizuoka prefectures, Japan, 1998  
 地方で収集した作物近縁野生種遺伝資源, 1998

No.	Month/ date	Site No.	Col.No.	Acc.No.	Genus & Species	Status	Locality			Latitude Longitude	Alt.	Topography	Shading	Degree of disturbance	Population size	Growth stage	Seed samples	Nodule samples	Specimens	Characteristics and notes	Associated plants	
							Prefecture	District	Village													
84	10/22	154	CED98069	03032465	<i>Glycine soja</i>	wild	Yamaguchi	Shimonoseki	Oduku 小月	34°04'11.5" N 131°02'45.9" E	0m	hill	open	med	100m <sup>2</sup>	mature	bulk	no	0	waste land	<i>Solidago altissima</i>	
85	10/22	155	CED98070	03032490	<i>Echinochloa utilis</i>		"	Sanyo	Nagatomo 長友	34°03'14.3" N 131°08'04.3" E	10m	"	"	high	4~5 fields 1ha	"	bulk	no	0	cultivated, lodged		
86	10/22	156	CED98071	03032467	<i>Glycine soja</i>	wild	"	Ube	Futamatase 二俣瀬区	34°03'38.4" N 131°17'34.7" E	0m	"	"	"	5m <sup>2</sup>	"	bulk	no	0		<i>Pueraria lobat</i>	
87	10/23	157	CED98072	03032429	<i>Vigna umbellata</i>	cultivated	"	Kudamatsu	下松市 恋路トンネル	34°01'58.4" N 131°52'59.4" E	60m	"	"	"	50m <sup>2</sup>	mature~ past mature	11 + bulk	no	1		<i>Setaria spp.</i>	
88	10/23	157	CED98073	03032491	<i>Cassia tora</i>	escaped	"	"	"	34°01'58.4" N 131°52'59.4" E	60m	"	"	"	5m <sup>2</sup>	mature	bulk	no	0	cultivated, claysoil	with soybean	
89	10/23	158	CED98074	03032418	<i>Vigna angularis</i>	weedy	"	"	Kiyama 切山	34°01'51.4" N 131°55'31.0" E	30m	"	"	med	1 plant	"	1	no	1	waste land, pods very clean, probably just as escape	<i>Pueraria lobat</i> dominant covering the one plant.	
90	10/23	158	CED98075	03032468	<i>Glycine soja</i>	wild	"	"	"	34°01'51.4" N 131°55'31.0" E	30m	"	"	high	10m <sup>2</sup>	"	bulk	no	0	waste land, the area had recently been cut but plants were growing up a net fence		
91	10/23	159	CED98076	03032430	<i>Vigna angularis</i>	cultivated	"	Iwakuni	Kuna 抗名	34°10'24.7" N 132°06'37.0" E	0m	"	"	"	300m <sup>2</sup>	mature~ flowering	bulk	no	0	cultivated, 3 cultivars here, black pod, light brown pod, black mottle seeded	with other bean	
92	10/24	160	CED98077	03032469	<i>Glycine soja</i>	wild	"	Hongo	本郷町 奥原 尾原	34°24'13.6" N 132°57'16.9" E	0m	plain	"	"	5ha	mature	8 + bulk	no	1	cultivated	<i>Pueraria</i>	
93	10/24	161	CED98078	03032470	"	"	"	"	Hongomatsu yakuba 本郷町役場前	34°24'21.9" N 132°59'05.6" E	0m	"	"	"	100m <sup>2</sup>	"	5 + bulk	no	2	between cultivated and river, large smooth black seeds	しの竹	
94	10/24	161	CED98079	03032471	"	"	"	"	"	34°24'21.9" N 132°59'05.6" E	0m	"	"	"	1ha	"	5 + bulk	no	1	edge of river, normal sized seeds	<i>Solidago altissima</i>	
95	10/25	162	CED98081	03032472	"	"	Aichi	Okazaki 岡崎市	Fukawa 藤川	34°55'03.9" N 137°12'47.4" E	40m	"	"	"	100m <sup>2</sup>	"	10 + bulk	yes	1	Price, embankment (田と農道の間)	<i>Solidago altissima</i> , <i>Setaria spp.</i>	
96	10/26	163	CED98082	03032473	"	"	Shizuoka	Hamamatsu 浜松市	Kawawamatu 河輪町	34°40'32.7" N 137°47'14.0" E	0m	plain	"	low	10~30ha more	"	10 + bulk		1	河川敷の広範囲	<i>Solidago altissima</i> , <i>L.の竹</i> , <i>Miscanthus sinensis</i>	
97	10/26	164	CED98083	03032397	<i>Vigna angularis</i>	wild	"	Shimada	島田市	Yanagibashi 榑橋	34°51'00.1" N 138°06'29.1" E	85m	"	"	med	2ha	"	14 + bulk	yes	1	河川敷(国道64号の広域)	<i>Solidago altissima</i> , <i>Miscanthus sinensis</i> , 榑(小木林)
98	10/26	165	CED98084	03032398	"	"	"	Shimizu	清水市	Syuzenji 承元寺	35°04'53.6" N 138°31'07.7" E	20m	"	"	high	10m <sup>2</sup>	"	3	yes	1	川より2m上の平地(榑の木に巻き付き), 河川敷から2~3m上がった畑横の空き地	榑の木
99	10/26	165	CED98085	03032399	"	"	"	"	"	35°04'53.6" N 138°31'07.7" E	20m	"	"	"	100m <sup>2</sup>	"	10 + bulk	yes	1	河川畑3mから上に2mの斜地	<i>Glycine soja</i> , しの竹, <i>ダイズ畑</i>	
100	10/27	166	CED98086	03032474	<i>Glycine soja</i>	"	"	Nrayama	葛山町	Haraki 原木	35°03'51.7" N 138°56'14.6" E	30m	"	"	"	200m <sup>2</sup>	"	10	yes	1	河川敷の畑横の茂み	栗の木畑と野稈畑の間の茂み



Map. Exploration route and collection sites (●) . Number in parenthesis indicate site number.  
探索経路と収集地点 (●)。括弧内は収集地点番号。

## 日本における作物近縁野生種の保存：Vigna 属

### 3. 九州の探索 1998年10月16日～10月21日



Fig.1 Abandoned or untended field in which a mixture of legumes were found growing including cowpea (*V. unguiculata* CED98039) surrounding electricity post at Mashik-imachi akai (益城町赤井), Kumamoto (熊本県).

熊本県益城町赤井(収集地点140)の荒地に見つかったアズキと数種の種皮色を持つササゲのエスケープ。木の電柱の周りにササゲが生育している。



Fig.2 Large weedy population of *V. angularis* (CED98063) growing in semishade beneath young conifer trees at Isedou (伊勢堂), Ooita (大分県).

若い針葉樹の下のやや日当たりの悪い環境で生育していた雑草アズキの集団(大分県伊勢堂, CED98063, 収集地点151)。

### 4. 山口, 広島, 岡山, 愛知, 静岡の探索 1998年10月22日～10月27日



Fig.1 Small field of cultivated *V. umbellata* (CED98072) growing at Kudamatsu (下松) Yamaguchi (山口県) above terraced rice paddy fields. The field was partially harvested at the time of collecting.

山口県下松市のツルアズキ; *V. umbellata* (CED98072) が栽培されていた場所(収集地点157)。ツルアズキはアズキに近縁な作物で、以前は日本の温暖な地域で広く栽培されていたと思われるが、近年ほとんど栽培されなくなった作物である。