

Collaborative Survey of Eggplant Genetic Resources in Lao PDR, 2016

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Summary

Under a Memorandum of Understanding, the National Institute of Agrobiological Sciences (NIAS) of Japan and the National Agriculture and Forestry Research Institute (NAFRI) of the Lao People's Democratic Republic (Lao PDR) have collaborated since 2006 to survey plant genetic resources in Lao PDR. The main objective of the current survey was to collect samples of eggplant (*Solanum melongena* L.) and related crop species from the northwestern provinces of Luang Namtha and Bou Keo, in Laos. From 7th to 23rd November, 2016, we collected a total of 108 samples, including 91 of *S. melongena* and 17 of other *Solanum* species. We discovered a wide diversity of eggplant landraces showing strong variation in fruit shape (cylindrical, ellipsoid, ovoid, and globular), length (9 - 212 mm), and color (purple, green, and white); spineless landraces were common. Seeds of these genetic resources will be produced by self-pollination, and NAFRI staff will evaluate the characteristics of the materials during the next season. The seeds produced at NAFRI will be shared between Laos and Japan. We plan to evaluate morphological characteristics and resistance of the accessions to *Verticillium* wilt, bacterial wilt, *Fusarium* wilt, and nematodes in Japan.

KEY WORDS: *Solanum*, eggplant, Laos, NAFRI, HRC, NIAS, NIVFS

Introduction

Under a Memorandum of Understanding, the National Institute of Agrobiological Sciences (NIAS) of Japan and the Horticulture Research Center (HRC) of the National Agriculture and Forestry Research Institute of the Lao People's Democratic Republic (Lao PDR), have collaborated since 2006 to survey plant genetic resources in Lao PDR as part of the NIAS Genebank Project. This report describes the findings of the sixth survey under this Memorandum, which is also the third survey in the PGRAsia project of the Ministry of Agriculture, Forestry and Fisheries of the Government of Japan, to collect vegetable plant genetic resources. Reports of the surveys conducted in 2007, 2008, 2009, 2014, and 2015, have been published (Sakata *et al.* 2008; Saito A *et al.* 2009; Matsunaga *et al.* 2010; Saito T *et al.* 2015, 2016). In 2014 and 2015, 134 and 124 samples of eggplant (*Solanum* spp., including wild relatives) were collected from the northern provinces of Houaphan, Xiengkhouang, Oudomxay, and Phongsaly in Lao PDR. Northwestern Lao PDR is a mountainous region (Photo 1) which is home to many ethnic minorities; at least 48 ethnic tribes live in Lao PDR (Chamberlain and Phomsombath 2003). The logistics of reaching and interacting with minorities are difficult; thus, it is likely that many undescribed landraces are maintained in this region. In this survey, we collected new samples from many villages in the northwestern provinces of Luang Namtha and Bou Keo.

Methods

Before the survey, Dr. Sisaphaithong collected information on eggplant genetic resources in the provinces of Bou Keo (Bokeo) and Luang Namtha (Fig. 1). Based on this information, we surveyed the area from 7th to 23rd November, 2016 (Table 1). We rented a car (Photo 2) to visit local markets (Photo 3) and farmer stalls (Photo 4), homes (Photo 5), and fields to obtain samples of fruits or seeds, focusing on landraces. After confirming a site location by GPS, we gathered samples and interviewed people to collect information about the samples, such as the local name, usage, and area of cultivation (Photos 6 and 7).

On 8th November, we visited the HRC and explained the objectives and plan of our survey to the Deputy Director, Mr. Souvanh Thadavong, and staff members (Photo 8). On 21st November, we revisited the HRC, extracted seeds from the collected materials (Photo 9), and reported our preliminary results (Photo 10).

Results

We traveled and surveyed nearly 3,000 km (Table 1) and collected a total of 108 samples from 8 districts (24 villages) in 2 provinces (Table 2). The collected plant materials comprised 91 samples of *Solanum melongena* L., 10 of *Solanum aethiopicum* L., 1 of *Solanum torvum* Sw., 1 of *Solanum macrocarpon* L., and 5 of *Solanum violaceum* R. Br. (Table 3), from 11 ethnic tribes (Table 4). Following the survey, the seeds were kept at the HRC. After the seeds are propagated and the plant materials are characterized, the seeds will be shared equally between the NIAS Genetic Resources Center (NIAS GRC, now NARO GRC) and the HRC.

The remainder of this section describes the day-to-day details of our survey. All the collected samples were mature fruits, unless otherwise specified.

9th November: We traveled from Vientiane, via Van Vieng, Kasi, and POUNGDONG, to Luang Prabang on Routes 10, 13N, unnumbered, 4, and 13N. The road conditions between Vientiane and Van Vieng were

Table 1. Itinerary followed during the 2016 survey in northwestern Lao PDR

Date	Day	Itinerary	Stay	Distance covered (km)
7-Nov	Mon	Chubu 11:00 (TG645) -- 15:40 Bangkok 19:35 (TG574) -- 20:45 Vientiane	Vientiane	
8-Nov	Tue	Markets in Vientiane, visit Horticultural Research Center (HRC), explain and discuss the survey	Vientiane	39
9-Nov	Wed	Vientiane -- Van Vieng -- Kasi -- Pongdong -- Luang Phabang	Luang Phabang	364
10-Nov	Thu	Luang Phabang -- Pak Mong -- Oudomsay -- Na Teuy -- Luang Namtha	Luang Namtha	318
11-Nov	Fri	Luang Namtha -- Vieng Phoukha -- Nam Fa -- Luang Namtha	Luang Namtha	177
12-Nov	Sat	Luang Namtha -- Muang Sing -- Done Chai -- Luang Namtha	Luang Namtha	161
13-Nov	Sun	Luang Namtha -- Samsop -- Hatmaleng -- Luang Namtha	Luang Namtha	118
14-Nov	Mon	Luang Namtha -- Vieng Phoukha -- Huay Xai	Huay Xai	188
15-Nov	Tue	Huay Xai -- Phimonsin -- Huay Xai -- Simuangngam -- Huay Xai	Huay Xai	185
16-Nov	Wed	Huay Xai -- Phimonsin -- Meung -- Huay Xai	Huay Xai	236
17-Nov	Thu	Huay Xai -- Pha Oudom -- Huay Xai	Huay Xai	187
18-Nov	Fri	Huay Xai -- Luang Namtha -- Na Teuy -- Pak Mong -- Oudomsay -- Luang Phabang	Luang Phabang	493
19-Nov	Sat	Luang Phabang, Data arrangement -- Pongdong -- Kasi -- Vang Vieng	Vang Vieng	263
20-Nov	Sun	Van Vieng -- Vientiane, Data arrangement	Vientiane	190
21-Nov	Mon	Vientiane, Data arrangement, visit HRC and report the preliminary results of survey	Vientiane	39
22-Nov	Tue	Vientiane 21:30 (TG575) -- 22:35	on flight	(Total 2958)
23-Nov	Wed	Bangkok 00:05 (TG644) -- 07:30 Chubu		

Table 2. Accessions collected during the 2016 survey in northwestern Lao PDR

Province	District	No. of villages	<i>Solanum melongena</i>	<i>Solanum aethiopicum</i>	<i>Solanum torvum</i>	<i>Solanum macrocarpo</i>	<i>Solanum violaceum</i>	Total
Bou Keo	Houay Xay	3	9	2	0	1	1	13
Bou Keo	Meung	4	10	3	0	0	0	13
Bou Keo	Pha Oudom	2	12	0	0	0	0	12
Bou Keo	Ton Pheung	1	3	0	0	0	0	3
Luang Namtha	Nalae	2	10	0	0	0	0	10
Luang Namtha	Namtha	7	18	3	1	0	1	23
Luang Namtha	Sing	3	16	1	0	0	0	17
Luang Namtha	Vieng Phoukha	2	13	1	0	0	3	17
Total		24	91	10	1	1	5	108

bad: asphalt was missing in some places, and most parts of the road were uneven and bumpy. Although we visited several small markets along the way, nothing was collected because only commercial eggplant cultivars (for example, Photo 3) were offered. The journey took about 9 h.

10th November: We traveled from Luang Prabang, via Pakmong, Oudomxay, and Na Teuy, to Luang Namtha on Routes 13N, 13B, and 17A. Although we visited several small markets along the way, nothing was collected because only commercial eggplant cultivars were offered. The journey took about 8 h. Chinese-owned plantations that export common bean (*Phaseolus vulgaris*) to China have recently increased in this area (Photo 11); therefore, the production of traditional upland rice and vegetables has decreased,

causing concern among farmers.

11th November: We visited a small market in the village (ban) of Ban Namchang (Photo 3), where we collected information on eggplant production and one sample (No. 1). Then we visited the Province Agriculture and Forestry Office (PAFO) of Luang Namtha and explained our plans and objectives to the Head of Agriculture, Mr. Phimkeo Thamlasinh (Photo 12). The Head assigned a PAFO staff member to assist our survey of Luang Namtha province, and various staff members of the District Agriculture and Forestry Office (DAFO) to assist the district surveys. In Ban Phon Saxsayan, we collected two accessions (Nos. 2 and 3). Two more samples (Nos. 4 [*S. melongena*] and 5 [*S. torvum*]; Photos 13 and 14) were collected at a nearby house, where they were grown for home use. The farmer reported that fruit with a spineless calyx was usually eaten raw, and that fruit with a spiny calyx was cooked. In Ban Naleu, we collected five samples (Nos. 6-10), including *S. aethiopicum* (No. 8) and *S. violaceum* (No. 10, photo 15). In Ban Namtung, we collected eight samples (Nos. 11-18) from two houses (Photos 16-18). We traveled from Luang Namtha to Vieng Phouka via Routes 17A and 3. A DAFO staff member of Vieng Phoukha District joined us (Photo 19). In Ban Vieng Savang, we surveyed (Photo 20) and collected five samples (Nos. 19-23), including *S. violaceum* (Nos. 21 and 22, Photos 21 and 22) and *S. aethiopicum* (No. 23, Photo 23). In Ban Nam Par, we collected eight accessions (Nos. 24-31, Photo 24), including *S. violaceum* (No. 28, Photo 25). On the way to Luang Namtha, we collected two samples (Nos. 32 and 33) from a farmer field. In Ban Vieng Savang, we collected two samples (Nos. 34 and 35, Photo 26). The color underneath the calyx of collection No. 34 was dark purple, which suggests that the skin pigment is tulipain (Azuma *et al.* 2008). Back in Luang Namtha we extracted seeds from collected rotten fruits (Photo 27).

12th November: We collected one sample (No. 36), which showed high yield and produced non-bitter fruits, behind a gasoline station in Ban Vieng Gent. A PAFO staff member joined us there. We traveled from Namtha district to Sign district on Route 17A. The journey took about 2 h. In Ban Nang Bou, we collected six samples (Nos. 37-42), including *S. aethiopicum* (No. 41, Photo 28). We went to other villages off the main road. The road conditions were bad, most of it was unpaved, uneven, and bumpy. In Ban Lank Kham (Photo 7), we collected nine samples (Nos. 43-51), including a rotten fruit (No. 50, Photo 29) and a mature fruit given to us by a farmer. After lunch, we collected two samples (Nos. 52 and 53) in Ban Nam da Mai, near the border with China (Photo 30). This village featured large Chinese-owned banana plantations (Photo 31). On the way back to Namtha, we collected one *S. aethiopicum* sample (No. 54, Photo 32) at a small market in Ban Lak Khane Mai Kh (Photo 4), and three samples (Nos. 55-57) at another small market in Ban Nam Mant.

13rd November: The same PAFO staff member joined us at the aforementioned gasoline station. We traveled from Luang Namtha to Nalae via Route 3 and a small road alongside a river. The road conditions were bad, most of it being unpaved, uneven, and bumpy. The journey took about 2 h. In Ban Hat Na Leng, we surveyed (Photo 1) and collected seven samples (Nos. 58-64, Photos 33 and 34). In Ban Pou Phat, we collected three smoked samples (Nos. 65-67) from a farmer (Photo 35). We visited a few villages and small shops near the river, but we could not collect eggplant samples. In this area, vegetables were usually planted together with upland rice. Eggplant seeds were stored in warehouses in an upland rice field far from farm houses.

14th November: We traveled from Luang Namtha to Huay Xay via Route 3. The journey took about 5 h. In Huay Xay, we visited a market and collected information on eggplants. We extracted seeds from rotten fruits that we had collected and put dried seeds into paper bags. We then sorted data and photographs.

15th November: We visited the PAFO at Bou Keo and explained our plans and objectives to the deputy director (Photo 36). In Ban Noung Khon we collected six samples (No. 68-73), including *S. violaceum* (No. 69, Photo 37) and *S. aethiopicum* (Nos. 72 and 73, Photo 38). In Ban Peion Sain we collected two samples (Nos. 74 and 75). In Ban Dand Poue we collected five samples (Nos. 76-80), including *S. macrocarpon* (No. 76); the leaves of this accession are popular in the preparation of the traditional Lao dish *larb*. We revisited the PAFO and explained our plans and objectives again to the director, Mr. Chanpheng Aintavong (Photo 39). The director assigned one PAFO staff member to assist our survey in Bou Keo province, and various DAFO staff members to assist our surveys in the district. In Ban She Meunggen, on the way to Donsao (Photo 40), near the borders with China and Myanmar, we collected three samples (Nos. 81-83, Photo 41).

16th November: We traveled from Huay Xay to Meung via Route 3 and a small road. The road conditions between Phimonsin and Meung were bad. The journey took about 3 h. We visited the DAFO of Meung District and explained our survey (Photo 42). A DAFO staff member joined us (Photo 43). In Ban Larn Khoum Meung, we collected three accessions (Nos. 84-86), including *S. aethiopicum* (No. 86). This area is famous for tea and sake. In Ban Phoum Savang, we collected five samples (Nos. 87-91, Photo 44), including *S. aethiopicum* (No. 91). In Ban Nam Meung, we collected four samples (Nos. 92-95). The parent plant of one sample (No. 92) was 2 years old. Many plants were 2 or 3 years old. In Ban Houayt Tant, we collected one *S. aethiopicum* sample (No. 96).

17th November: We traveled from Huay Xay to Pha Oudom. The road conditions were good. The journey took about 3 h. We visited the DAFO of Pha Oudom District and explained our survey (Photo 45). In Ban Pang Thoung, we collected eight samples (Nos. 97-104), including smoked fruits (Nos. 101 and 102, Photo 46). At the market we saw a commercial cultivar from Thailand with a higher price, but no better taste than a landrace from nearby. Usually the former is used in papaya salad and the latter in *larb*. In Ban See Boun Houng we collected four samples (Nos. 105-108).

18th November: We returned to Luang Prabang on Routes 3, 13B, and 13N. The journey took about 11 h. Later, we extracted the seeds from rotten fruits.

19th November: We sorted data and photographs. We then traveled from Luang Prabang to Vang Vieng via Pongdong and Kasi on Route 4 and 3, a new road.

20th November: We traveled from Vang Vieng to Vientiane via Thahua, Phonhong, Naxay Kang, and Tha Ngon, on Routes 13N and 10. The journey took 4 h.

21st November: We sorted data and photographs in the morning, and returned to the HRC in the

afternoon to report our preliminary results. The HRC members of our team extracted seeds from the collected fruits and dried them. We finished with a farewell dinner (Photo 47).

Discussion

The rainy season in northern Laos is usually over by the end of October, but rain continued for the first few days of the survey. If this was an effect of climate change, we will have to reassess the period for exploring eggplant genetic resources in Lao PDR.

Our collection of seeds from numerous eggplant landraces was facilitated by the widespread availability of mature fruits in gardens, fields, and markets, as we found in Houaphan and Xiengkhouang provinces in 2014 (Saito T *et al.* 2015), and in Oudomxay and Phongsaly provinces in 2015 (Saito T *et al.* 2016). We were unable to communicate directly with the different ethnic groups, but the PAFO and DAFO staff who assisted our work acted as translators. In other countries, generally the flesh and skin of immature eggplants are eaten. However, we found that in northwestern Laos, people also eat the skin, but not the flesh of mature fruits. We discovered that eggplants from Luang Namtha and Bou Keo vary widely in shape (cylindrical, ellipsoid, ovoid, and globular; Fig. 2), length (9 - 212 mm), and skin color of immature fruits (purple, green, and white; Table 4), and that spineless landraces were popular, as in Houaphan, Xiengkhouang, Oudomxay, and Phongsaly. We will test the genetic diversity among the samples using DNA markers.

Although we focused on *S. melongena*, we also collected samples of *S. aethiopicum* (formerly *S. gilo*), *S. torvum*, *S. macrocarpon*, and *S. violaceum*. These species are primarily used for medicine, although they are also edible. Laotians sometimes eat the raw fruits, but we found them too bitter.

We observed many large plantations managed by Chinese capital, where farmers used inorganic fertilizers, pesticides, and seeds imported from China (Photo 48). The PAFO and DAFO staff told us that they were worried about the environmental harm caused by these chemicals (personal communication from staff). Many Laotians prefer organically grown foods, and the number of organic farmers is increasing.

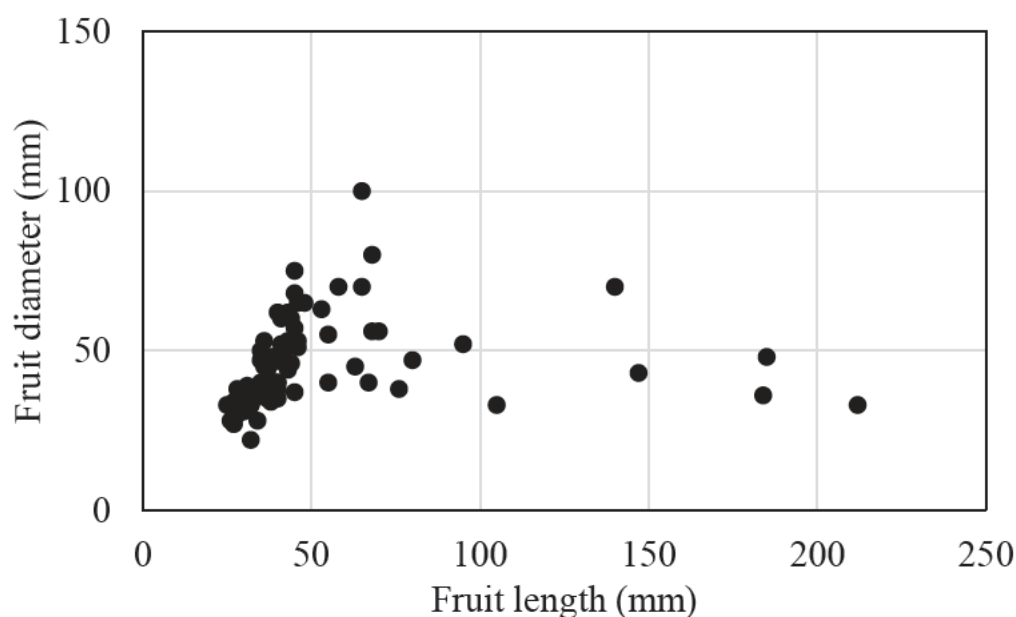


Fig. 2. Shape distribution of 88 *Solanum melongena* accessions (excluding Nos. 65-67) on a scatter plot of fruit length versus diameter.

However, it is difficult to grow organic crops unless new cultivation methods and improved cultivars are adopted. The HRC staff wants to breed new cultivars that are resistant to diseases and insects, produce high yields with less fertilizer, and are suitable for organic cultivation.

We discussed and planned future collaborations with the HRC staff, and we plan to cooperate with them to evaluate eggplant genetic resources and breed new cultivars. Seeds collected in the present field study will be produced by self-pollination, and the HRC staff are going to evaluate the materials in the next season. The seeds produced at the HRC are to be shared between Laos and Japan. We also plan to evaluate the morphological characteristics and resistance of the accessions to *Verticillium* wilt, bacterial wilt, *Fusarium* wilt, and nematodes in Japan.

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ラオスにおけるナス遺伝資源の共同探索，2016 年

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和文摘要

本報告は、独立行政法人農業生物資源研究所とラオス農林省との間で 2006 年に締結した共同研究協定（MOU）に基づいて行われたラオス国における 2016 年の野菜遺伝資源の調査報告である。調査は、2016 年 11 月 7～23 日にかけ、ナスを主な調査対象とした。今回は、ラオス国北部地域であるルアンナムタ県およびボケオ県を調査した。ナス栽培種 *Solanum melongena* を 91 点およびナス近縁種を 17 点の合計 108 点の種子サンプルを収集した。当該地域におけるナスの多様性は高く、果形や果色に広い変異が観察され、とげなし性の在来種が多かったことは興味深い。これら遺伝資源の種子は自殖によって増殖し、ラオス園芸研究センター（HRC）で特性調査が行われる予定である。将来的には、種子は日本とラオスの両国が保有し、日本でも土壌伝染性病害虫への抵抗性を含む諸特性を調査する予定である。

Table 3. Several characteristics of accessions collected during the 2016 survey in northwestern Lao PDR

Collection No	Harvested fruit (immature fruit)				Skin color of mature fruit	Color of flower	Spiny (1) or spineless (0)			Collected from (tribes)	Remarks
	Skin color	Length (mm)	Length/Diameter	Shape			Calyx	Stem	Leaf		
1	White	27	0.54	Globular	Yellow	-	0	0	0	-	<i>Solanum aethiopicum</i>
2	Green	27	0.87	Globular	Yellow	Purple	1	1	1	Lao	
3	Green	28	0.93	Globular	Yellow	Purple	0	0	0	Lao	
4	Green	30	0.83	Globular	Yellow	Purple	1	0	0	Lao	
5	Green	15	1.00	Globular	Yellowish white	White	0	1	0	Lao	<i>S. torvum</i>
6	Green	35	0.97	Globular	Yellow	Purple	1	0	0	Lao tong	
7	Green	38	0.97	Globular	Yellow	Purple	1	1	1	Lao tong	
8	Green	34	0.59	Globular	Orange	White	1	1	1	Lao tong	<i>S. aethiopicum</i>
9	Green	53	0.84	Globular	Yellow	Purple	0	0	0	Lao tong	
10	Green	9	0.90	Globular	Orange	Light purple	0	0	0	Tai dam	<i>S. violaceum</i>
11	Green	41	0.79	Globular	Yellow	Purple	0	0	0	Leu	
12	Pale Purple	46	0.71	Globular	Yellow	Purple	1	0	0	Leu	
13	Pale Purple	43	0.69	Globular	Yellow	Purple	1	0	0	Leu	
14	White	45	1.22	Ovoid	Yellow	Purple	0	0	0	Leu	
15	Greenish Purple	37	0.79	Globular	Ocher	Purple	1	0	0	Leu	
16	Green	28	0.74	Globular	Ocher	White	0	0	0	Leu	
17	Pale Purple	40	1.00	Globular	Ocher	Purple	0	0	0	Leu	
18	Purple	35	0.88	Globular	Ocher	Purple	0	0	0	Leu	
19	Green	42	0.91	Globular	Yellow	Purple	1	0	0	Tai dam	
20	Green	40	1.00	Globular	Yellow	Purple	0	0	0	Tai dam	
21	Whitish Green	11	1.00	Globular	Orange	Purple	0	0	0	Tai dam	<i>S. violaceum</i>
22	Whitish Green	9	1.00	Globular	Orange	Light purple	0	0	0	Tai dam	<i>S. violaceum</i>
23	-	27	0.54	Globular	Orange	White	0	0	0	Tai dam	<i>S. aethiopicum</i>
24	-	80	1.70	Ellipsoid	Yellow	-	0	0	0	Yamg	
25	Whitish Green	58	0.83	Globular	Yellow	-	1	0	0	Yamg	
26	Whitish Green	36	0.68	Globular	Yellow	Purple	1	0	0	Yamg	Ribs on fruit
27	Whitish Green	35	0.97	Globular	Yellow	Purple	1	1	1	Yamg	
28	Green	9	0.82	Globular	Orange	Purple	1	1	1	Yamg	<i>S. violaceum</i>
29	Green	32	1.45	Ovoid	Ocher	Purple	0	0	0	Yamg	
30	Green	65	0.93	Globular	Ocher	Purple	1	0	0	Yamg	
31	Green	70	1.25	Ovoid	Yellow	Purple	1	0	0	Yamg	
32	Green	30	0.94	Globular	Ocher	Purple	1	0	0	Yamg	
33	Green	45	0.66	Globular	Yellow	Purple	1	0	0	Yamg	
34	Purple	147	3.42	Cylindrical	Ocher	Purple	1	0	0	Kha mou	Anthocyanin coloration underneath calyx
35	Greenish Purple	68	1.21	Ovoid	Ocher	-	0	0	0	Kha mou	
36	Whitish Green	46	0.87	Globular	Yellow	White	0	0	0	Phou Noy	
37	Green	38	1.12	Globular	Yellow	Light purple	0	0	0	Phou Noy	
38	Green	32	0.94	Globular	Yellow	Light purple	0	0	0	Phou Noy	
39	Green	37	0.95	Globular	Yellow	Light purple	0	0	0	Phou Noy	
40	Purple	35	0.70	Globular	Yellow	Light purple	0	0	0	Phou Noy	
41	Whitish Green	25	0.83	Globular	Orange	Light purple	0	0	0	Phou Noy	<i>S. aethiopicum</i>
42	Whitish Green	40	1.05	Globular	Yellow	Purple	0	0	0	Phou Noy	
43	Green	25	0.76	Globular	Ocher	Purple	1	0	0	Ar kar	
44	Whitish Green	43	0.98	Globular	Yellow	-	0	0	0	Ar kar	
45	Green	35	0.74	Globular	Yellow	Purple	1	0	0	Ar kar	
46	Greenish Purple	30	0.91	Globular	Yellow	Purple	0	0	0	Ar kar	
47	Green	44	0.96	Globular	Yellow	White	0	0	0	Ar kar	
48	Whitish Green	36	0.78	Globular	Yellow	Purple	1	0	0	Ar kar	
49	Purple	45	0.60	Globular	Ocher	-	0	0	0	Ar kar	
50	Purple	140	2.00	Ellipsoid	-	-	0	0	0	Ar kar	Rotten fruit
51	Purple	34	1.21	Ovoid	Ocher	-	0	0	0	Ar kar	Only mature fruit
52	Green	30	0.97	Globular	Yellow	Purple	1	1	1	Ar kar	Strong spines
53	White	31	0.89	Globular	Yellow	Light purple	1	1	1	Ar kar	
54	Green	30	0.54	Globular	Red	-	0	0	0	Ar kar	<i>S. aethiopicum</i>
55	Green	48	0.74	Globular	Yellow	-	0	0	0	Ar kar	
56	Green	40	0.65	Globular	Yellow	-	0	0	0	Ar kar	
57	Greenish Purple	185	3.85	Cylindrical	-	-	0	0	0	Ar kar	
58	Greenish Purple	76	2.00	Ellipsoid	-	Purple	0	0	0	Ka mou	
59	Whitish Green	35	0.97	Globular	Yellow	Purple	1	0	0	Ka mou	
60	Whitish Green	37	0.97	Globular	Yellow	White	1	0	0	Ka mou	
61	Green	37	0.84	Globular	Yellow	Purple	1	1	1	Ka mou	
62	Green	41	0.68	Globular	Yellow	White	1	1	1	Ka mou	
63	Green	39	0.81	Globular	Yellow	White	0	0	0	Ka mou	
64	Greenish Purple	38	0.79	Globular	Yellow	Purple	1	1	1	Ka mou	
65	-	-	-	-	White	-	0	0	0	Ka mou	Smoked fruit
66	-	-	-	-	-	-	0	0	0	Ka mou	Smoked fruit

Table 3. (Continued).

Collection No	Harvested fruit (immature fruit)				Skin color of mature fruit	Color of flower	Spiny (1) or spineless (0)			Collected from (tribes)	Remarks
	Skin color	Length (mm)	Length/Diameter	Shape			Calyx	Stem	Leaf		
67	-	-	-	-	-	-	0	0	0	Ka mou	Smoked fruit
68	Purple	30	0 86	Globular	Yellow	Purple	1	0	0	Ka mou	
69	Green	10	1 00	Globular	Orange	Purple	0	1	1	Ka mou	<i>S. violaceum</i>
70	Whitish Green	32	0 97	Globular	Yellow	Purple	1	1	1	Ka mou	
71	Whitish Green	38	1 00	Globular	Yellow	Purple	1	0	0	Ka mou	
72	Green	57	1 73	Ellipsoid	Red	-	0	0	0	Ka mou	<i>S. aethiopicum</i>
73	Green	30	0 55	Globular	Red	-	0	0	0	Ka mou	<i>S. aethiopicum</i>
74	Greenish Purple	33	0 94	Globular	Yellow	Purple	0	0	0	Leu	
75	Whitish Green	39	0 98	Globular	Yellow	Purple	1	0	0	Leu	
76	Whitish Green	47	0 84	Globular	Brown	-	0	0	0	Ka mou	<i>S. macrocarpon</i>
77	Greenish Purple	43	0 81	Globular	Yellow	Purple	0	0	0	Ka mou	
78	Whitish Green	55	1 00	Globular	Yellow	Purple	0	0	0	Ka mou	
79	Whitish Green	67	1 68	Ellipsoid	Yellow	Purple	0	0	0	Ka mou	
80	Whitish Green	26	0 93	Globular	Yellow	Purple	0	0	0	Ka mou	
81	Whitish Green	37	1 06	Globular	Yellow	White	0	0	0	Tai dam	
82	Whitish Green	33	0 89	Globular	Yellow	Purple	1	0	0	Tai dam	
83	Whitish Green	33	0 87	Globular	Yellow	White	0	0	0	Tai dam	
84	Whitish Green	32	0 94	Globular	Yellow	Purple	1	0	1	Leu	
85	Whitish Green	42	0 84	Globular	Yellow	White	1	0	0	Leu	
86	Green	30	0 65	Globular	Orange	White	1	1	1	Leu	<i>S. aethiopicum</i>
87	Green	46	0 90	Globular	Yellow	Purple	1	1	1	Ar kar	Strong spines
88	Green	40	1 14	Globular	Yellow	Purple	1	1	1	Ar kar	
89	-	184	5 11	Cylindrical	Ocher	Purple	0	0	0	Ar kar	
90	Whitish Green	45	0 79	Globular	Ocher	Purple	1	0	0	Ar kar	
91	-	35	0 67	Globular	Orange	White	0	0	0	Ar kar	<i>S. aethiopicum</i>
92	Green	63	1 40	Ellipsoid	Yellow	Purple	0	0	0	Leu	
93	Whitish Green	29	0 88	Globular	Yellow	Purple	1	1	1	Leu	
94	Greenish Purple	32	0 97	Globular	Yellow	Purple	1	1	0	Leu	
95	Whitish Green	38	0 83	Globular	Yellow	White	1	0	0	Leu	
96	White	28	0 58	Globular	Orange	White	0	0	0	Kouq	<i>S. aethiopicum</i>
97	-	44	0 73	Globular	Yellow	White	1	1	1	La mer	
98	White	65	0 65	Globular	Yellow	-	1	0	0	La mer	
99	Purple	27	1 00	Globular	Yellow	Purple	0	0	0	La mer	
100	Purple	68	0 85	Globular	Ocher	Purple	0	0	0	La mer	
101	Whitish Green	212	6 42	Cylindrical	-	Purple	0	0	0	La mer	Smoked fruit
102	Purple	105	3 18	Cylindrical	-	Light purple	0	0	0	La mer	Smoked fruit
103	Whitish Green	55	1 38	Ovoid	Yellow	Purple	0	0	0	La mer	
104	Green	95	1 83	Ellipsoid	Yellow	Purple	1	1	1	Tai dam	
105	Green	36	0 80	Globular	Ocher	Light purple	0	0	0	Tai dam	
106	Green	27	0 79	Globular	Yellow	Purple	0	0	0	Tai dam	
107	Greenish Purple	27	1 00	Globular	Yellow	Purple	1	1	1	Tai dam	
108	Green	31	0 79	Globular	Yellow	-	1	1	1	Tai dam	

Table 4. List of materials collected during the 2016 survey in northwestern Lao PDR

Collection No	JP No	Passport No	JP Name	Date	Genus and species	Province/State	District	Village	North latitude	East longitude	Elevation (m)	Source (Market name)	Status	Local name
1	258422	30069674	COL/LAOS/2016/NIVFS/001	11-Nov	<i>Solanum aethiopicum</i>	Luang Namtha	Namtha	Namgene	20 59 52 20	101 24 22 18	565	village market	landrace	Makkheua kam
2	258423	30069675	COL/LAOS/2016/NIVFS/002	11-Nov	<i>Solanum melongena</i>	Luang Namtha	Namtha	Phon Saxsayan	20 55 53 88	101 24 10 72	554	farmland	landrace	Makkheua kune
3	258424	30069676	COL/LAOS/2016/NIVFS/003	11-Nov	<i>Solanum melongena</i>	Luang Namtha	Namtha	Phon Saxsayan	20 55 53 46	101 24 10 72	554	farmland	landrace	Makkheua kune
4	258425	30069677	COL/LAOS/2016/NIVFS/004	11-Nov	<i>Solanum melongena</i>	Luang Namtha	Namtha	Phon Saxsayan	20 55 53 91	101 24 23 26	566	farmland	landrace	Makkheua kam
5	258426	30069678	COL/LAOS/2016/NIVFS/005	11-Nov	<i>Solanum torvum</i>	Luang Namtha	Namtha	Phon Saxsayan	20 55 53 52	101 24 22 77	562	backyard	landrace	Mak kang
6	258427	30069679	COL/LAOS/2016/NIVFS/006	11-Nov	<i>Solanum melongena</i>	Luang Namtha	Namtha	Naleu	20 55 52 08	101 24 25 14	562	farmland	landrace	Makkheua kem
7	258428	30069680	COL/LAOS/2016/NIVFS/007	11-Nov	<i>Solanum melongena</i>	Luang Namtha	Namtha	Naleu	20 55 52 08	101 24 25 14	562	farmland	landrace	Makkheua kem
8	258429	30069681	COL/LAOS/2016/NIVFS/008	11-Nov	<i>Solanum aethiopicum</i>	Luang Namtha	Namtha	Naleu	20 55 52 08	101 24 25 14	562	farmland	landrace	Makkheua kam
9	258430	30069682	COL/LAOS/2016/NIVFS/009	11-Nov	<i>Solanum melongena</i>	Luang Namtha	Namtha	Naleu	20 55 52 08	101 24 25 14	562	farmland	landrace	Makkheua dee
10	258431	30069683	COL/LAOS/2016/NIVFS/010	11-Nov	<i>Solanum violaceum</i>	Luang Namtha	Namtha	Naleu	20 55 50 33	101 24 34 04	560	farmland	landrace	Makkag kam
11	258432	30069684	COL/LAOS/2016/NIVFS/011	11-Nov	<i>Solanum melongena</i>	Luang Namtha	Namtha	Namtung	20 58 00 15	101 26 46 89	557	farmland	landrace	Makkheua viag
12	258433	30069685	COL/LAOS/2016/NIVFS/012	11-Nov	<i>Solanum melongena</i>	Luang Namtha	Namtha	Namtung	20 58 00 30	101 26 47 16	565	farmland	landrace	Makkheua kao
13	258434	30069686	COL/LAOS/2016/NIVFS/013	11-Nov	<i>Solanum melongena</i>	Luang Namtha	Namtha	Namtung	20 58 00 33	101 26 47 07	561	farmland	landrace	Makkheua kao
14	258435	30069687	COL/LAOS/2016/NIVFS/014	11-Nov	<i>Solanum melongena</i>	Luang Namtha	Namtha	Namtung	20 58 02 08	101 26 36 35	559	farmland	landrace	Makkheua
15	258436	30069688	COL/LAOS/2016/NIVFS/015	11-Nov	<i>Solanum melongena</i>	Luang Namtha	Namtha	Namtung	20 58 02 08	101 26 36 35	559	farmland	landrace	Makkheua
16	258437	30069689	COL/LAOS/2016/NIVFS/016	11-Nov	<i>Solanum melongena</i>	Luang Namtha	Namtha	Namtung	20 58 02 08	101 26 36 35	559	farmland	landrace	Makkheua
17	258438	30069690	COL/LAOS/2016/NIVFS/017	11-Nov	<i>Solanum melongena</i>	Luang Namtha	Namtha	Namtung	20 58 02 08	101 26 36 35	559	farmland	landrace	Makkheua
18	258439	30069691	COL/LAOS/2016/NIVFS/018	11-Nov	<i>Solanum melongena</i>	Luang Namtha	Namtha	Namtung	20 58 02 08	101 26 36 35	559	farmland	landrace	Makkheua mang
19	258440	30069692	COL/LAOS/2016/NIVFS/019	11-Nov	<i>Solanum melongena</i>	Luang Namtha	Vieng Phoukha	Vieng Savang	20 41 10 61	101 04 00 86	699	farmland	landrace	Makkheua kain
20	258441	30069693	COL/LAOS/2016/NIVFS/020	11-Nov	<i>Solanum melongena</i>	Luang Namtha	Vieng Phoukha	Vieng Savang	20 41 10 61	101 04 00 86	699	farmland	landrace	Makkheua kain
21	258442	30069694	COL/LAOS/2016/NIVFS/021	11-Nov	<i>Solanum violaceum</i>	Luang Namtha	Vieng Phoukha	Vieng Savang	20 41 11 13	101 04 01 06	697	backyard	landrace	Mak kang kam
22	258443	30069695	COL/LAOS/2016/NIVFS/022	11-Nov	<i>Solanum violaceum</i>	Luang Namtha	Vieng Phoukha	Vieng Savang	20 41 11 13	101 04 01 06	693	backyard	landrace	Mak khag kam
23	258444	30069696	COL/LAOS/2016/NIVFS/023	11-Nov	<i>Solanum aethiopicum</i>	Luang Namtha	Vieng Phoukha	Vieng Savang	20 41 12 08	101 03 58 13	704	farmland	landrace	Makkheua kam
24	258445	30069697	COL/LAOS/2016/NIVFS/024	11-Nov	<i>Solanum melongena</i>	Luang Namtha	Vieng Phoukha	Nam Par	20 37 19 53	101 04 39 27	678	farmland	landrace	Makkheua Hom Bar
25	258446	30069698	COL/LAOS/2016/NIVFS/025	11-Nov	<i>Solanum melongena</i>	Luang Namtha	Vieng Phoukha	Nam Par	20 37 13 47	101 04 41 54	683	farmland	landrace	Makkheua
26	258447	30069699	COL/LAOS/2016/NIVFS/026	11-Nov	<i>Solanum melongena</i>	Luang Namtha	Vieng Phoukha	Nam Par	20 37 12 25	101 04 40 67	678	farmland	landrace	Makkheua
27	258448	30069700	COL/LAOS/2016/NIVFS/027	11-Nov	<i>Solanum melongena</i>	Luang Namtha	Vieng Phoukha	Nam Par	20 37 12 25	101 04 40 67	678	farmland	landrace	Makkheua
28	258449	30069701	COL/LAOS/2016/NIVFS/028	11-Nov	<i>Solanum violaceum</i>	Luang Namtha	Vieng Phoukha	Nam Par	20 37 12 25	101 04 40 67	678	farmland	landrace	Mak kang
29	258450	30069702	COL/LAOS/2016/NIVFS/029	11-Nov	<i>Solanum melongena</i>	Luang Namtha	Vieng Phoukha	Nam Par	20 37 11 82	101 04 39 20	678	farmland	landrace	Makkheua noy
30	258451	30069703	COL/LAOS/2016/NIVFS/030	11-Nov	<i>Solanum melongena</i>	Luang Namtha	Vieng Phoukha	Nam Par	20 37 11 82	101 04 39 20	678	farmland	landrace	Makkheua yai
31	258452	30069704	COL/LAOS/2016/NIVFS/031	11-Nov	<i>Solanum melongena</i>	Luang Namtha	Vieng Phoukha	Nam Par	20 37 11 82	101 04 39 20	678	farmland	landrace	Makkheua
32	258453	30069705	COL/LAOS/2016/NIVFS/032	11-Nov	<i>Solanum melongena</i>	Luang Namtha	Vieng Phoukha	Nam Par	20 37 13 77	101 04 37 86	680	farmland	landrace	Makkheua
33	258454	30069706	COL/LAOS/2016/NIVFS/033	11-Nov	<i>Solanum melongena</i>	Luang Namtha	Vieng Phoukha	Nam Par	20 37 13 99	101 04 35 85	682	farmland	landrace	Makkheua yai
34	258455	30069707	COL/LAOS/2016/NIVFS/034	11-Nov	<i>Solanum melongena</i>	Luang Namtha	Vieng Phoukha	Vieng Savang	20 41 09 88	101 03 51 34	707	farmland	landrace	Makkheua yao
35	258456	30069708	COL/LAOS/2016/NIVFS/035	11-Nov	<i>Solanum melongena</i>	Luang Namtha	Vieng Phoukha	Vieng Savang	20 41 09 88	101 03 51 34	707	farmland	landrace	Makkheua yao
36	258457	30069709	COL/LAOS/2016/NIVFS/036	12-Nov	<i>Solanum melongena</i>	Luang Namtha	Namtha	Vieng Gent	21 00 50 19	101 24 44 41	568	backyard	landrace	Makkheua kao
37	258458	30069710	COL/LAOS/2016/NIVFS/037	12-Nov	<i>Solanum melongena</i>	Luang Namtha	Sing	Nang Bou	21 10 09 54	101 09 25 89	661	backyard	landrace	Makkheua kine
38	258459	30069711	COL/LAOS/2016/NIVFS/038	12-Nov	<i>Solanum melongena</i>	Luang Namtha	Sing	Nang Bou	21 10 09 54	101 09 25 89	661	backyard	landrace	Makkheua
39	258460	30069712	COL/LAOS/2016/NIVFS/039	12-Nov	<i>Solanum melongena</i>	Luang Namtha	Sing	Nang Bou	21 10 09 54	101 09 25 89	661	backyard	landrace	Makkeo
40	258461	30069713	COL/LAOS/2016/NIVFS/040	12-Nov	<i>Solanum melongena</i>	Luang Namtha	Sing	Nang Bou	21 10 09 54	101 09 25 89	661	backyard	landrace	Makkae sou
41	258462	30069714	COL/LAOS/2016/NIVFS/041	12-Nov	<i>Solanum aethiopicum</i>	Luang Namtha	Sing	Nang Bou	21 10 09 54	101 09 25 89	661	backyard	landrace	Makkae kam

Table 4. (Continued).

Collection No	JP No	Passport No	JP Name	Date	Genus and species	Province/State	District	Village	North latitude	East longitude	Elevation (m)	Source (Market name)	Status	Local name
42	258463	30069715	COL/LAOS/2016/NIVFS/042	12-Nov	<i>Solanum melongena</i>	Luang Namtha	Sing	Nang Bou	21 10 08 32	101 09 26 79	663	backyard	landrace	Makkae hamkoi
43	258464	30069716	COL/LAOS/2016/NIVFS/043	12-Nov	<i>Solanum melongena</i>	Luang Namtha	Sing	Lank Kham	21 10 10 07	101 11 58 50	699	backyard	landrace	Makkae hei
44	258465	30069717	COL/LAOS/2016/NIVFS/044	12-Nov	<i>Solanum melongena</i>	Luang Namtha	Sing	Lank Kham	21 10 10 07	101 11 58 50	699	backyard	landrace	Makkae hei
45	258466	30069718	COL/LAOS/2016/NIVFS/045	12-Nov	<i>Solanum melongena</i>	Luang Namtha	Sing	Lank Kham	21 10 10 11	101 11 57 96	701	backyard	landrace	Makkae hei
46	258467	30069719	COL/LAOS/2016/NIVFS/046	12-Nov	<i>Solanum melongena</i>	Luang Namtha	Sing	Lank Kham	21 10 10 55	101 12 00 06	702	backyard	landrace	Makkae hei
47	258468	30069720	COL/LAOS/2016/NIVFS/047	12-Nov	<i>Solanum melongena</i>	Luang Namtha	Sing	Lank Kham	21 10 10 55	101 12 00 06	702	backyard	landrace	Mak hei
48	258469	30069721	COL/LAOS/2016/NIVFS/048	12-Nov	<i>Solanum melongena</i>	Luang Namtha	Sing	Lank Kham	21 10 11 48	101 12 06 62	705	backyard	landrace	Mak hei
49	258470	30069722	COL/LAOS/2016/NIVFS/049	12-Nov	<i>Solanum melongena</i>	Luang Namtha	Sing	Lank Kham	21 10 12 18	101 12 03 82	701	backyard	landrace	Mak hei
50	258471	30069723	COL/LAOS/2016/NIVFS/050	12-Nov	<i>Solanum melongena</i>	Luang Namtha	Sing	Lank Kham	21 10 12 18	101 12 03 82	701	backyard	landrace	Mak hei
51	258472	30069724	COL/LAOS/2016/NIVFS/051	12-Nov	<i>Solanum melongena</i>	Luang Namtha	Sing	Lank Kham	21 10 12 18	101 12 03 82	701	backyard	landrace	Mak hei
52	258473	30069725	COL/LAOS/2016/NIVFS/052	12-Nov	<i>Solanum melongena</i>	Luang Namtha	Sing	Nam da Mai	21 10 51 36	101 13 36 96	766	backyard	landrace	Makkue
53	258474	30069726	COL/LAOS/2016/NIVFS/053	12-Nov	<i>Solanum melongena</i>	Luang Namtha	Sing	Nam da Mai	21 10 52 04	101 13 32 89	763	backyard	landrace	Mak hei
54	258475	30069727	COL/LAOS/2016/NIVFS/054	12-Nov	<i>Solanum aethiopicum</i>	Luang Namtha	Namtha	Lak Khane Mai Kh	21 08 40 34	101 21 16 26	769	farmstore	landrace	Mak hei
55	258476	30069728	COL/LAOS/2016/NIVFS/055	12-Nov	<i>Solanum melongena</i>	Luang Namtha	Namtha	Nam Mant	21 07 55 91	101 20 59 10	750	farmstore	landrace	Mak hei
56	258477	30069729	COL/LAOS/2016/NIVFS/056	12-Nov	<i>Solanum melongena</i>	Luang Namtha	Namtha	Nam Mant	21 07 55 91	101 20 59 10	750	farmstore	landrace	Mak hei
57	258478	30069730	COL/LAOS/2016/NIVFS/057	12-Nov	<i>Solanum melongena</i>	Luang Namtha	Namtha	Nam Mant	21 07 55 91	101 20 59 10	750	farmstore	landrace	-
58	258479	30069731	COL/LAOS/2016/NIVFS/058	13-Nov	<i>Solanum melongena</i>	Luang Namtha	Nalae	Hat Na Leng	20 43 46 74	101 25 30 05	498	backyard	landrace	Mak hoi
59	258480	30069732	COL/LAOS/2016/NIVFS/059	13-Nov	<i>Solanum melongena</i>	Luang Namtha	Nalae	Hat Na Leng	20 43 46 74	101 25 30 05	498	backyard	landrace	Mak hoi
60	258481	30069733	COL/LAOS/2016/NIVFS/060	13-Nov	<i>Solanum melongena</i>	Luang Namtha	Nalae	Hat Na Leng	20 43 46 74	101 25 30 05	498	backyard	landrace	Mak hoi
61	258482	30069734	COL/LAOS/2016/NIVFS/061	13-Nov	<i>Solanum melongena</i>	Luang Namtha	Nalae	Hat Na Leng	20 43 48 92	101 25 32 16	495	backyard	landrace	Mak hoi
62	258483	30069735	COL/LAOS/2016/NIVFS/062	13-Nov	<i>Solanum melongena</i>	Luang Namtha	Nalae	Hat Na Leng	20 43 51 01	101 25 33 20	495	backyard	landrace	Mak hei
63	258484	30069736	COL/LAOS/2016/NIVFS/063	13-Nov	<i>Solanum melongena</i>	Luang Namtha	Nalae	Hat Na Leng	20 43 53 18	101 25 33 85	492	backyard	landrace	Mak heu
64	258485	30069737	COL/LAOS/2016/NIVFS/064	13-Nov	<i>Solanum melongena</i>	Luang Namtha	Nalae	Hat Na Leng	20 43 53 32	101 25 33 81	491	backyard	landrace	Mak ker
65	258486	30069738	COL/LAOS/2016/NIVFS/065	13-Nov	<i>Solanum melongena</i>	Luang Namtha	Nalae	Pou Phat	20 43 05 76	101 25 59 09	502	farmland	landrace	Mak hu
66	258487	30069739	COL/LAOS/2016/NIVFS/066	13-Nov	<i>Solanum melongena</i>	Luang Namtha	Nalae	Pou Phat	20 43 05 76	101 25 59 09	502	farmland	landrace	Mak hou
67	258488	30069740	COL/LAOS/2016/NIVFS/067	13-Nov	<i>Solanum melongena</i>	Luang Namtha	Nalae	Pou Phat	20 43 05 76	101 25 59 09	502	farmland	landrace	Mak kue
68	258489	30069741	COL/LAOS/2016/NIVFS/068	15-Nov	<i>Solanum melongena</i>	Bou Keo	Houay Xay	Noung Khone	20 23 15 36	100 34 57 69	424	backyard	landrace	Mak ken
69	258490	30069742	COL/LAOS/2016/NIVFS/069	15-Nov	<i>Solanum violaceum</i>	Bou Keo	Houay Xay	Noung Khone	20 23 15 36	100 34 57 69	424	backyard	landrace	Mak kou
70	258491	30069743	COL/LAOS/2016/NIVFS/070	15-Nov	<i>Solanum melongena</i>	Bou Keo	Houay Xay	Noung Khone	20 23 16 51	100 34 55 22	419	backyard	landrace	Mak ken
71	258492	30069744	COL/LAOS/2016/NIVFS/071	15-Nov	<i>Solanum melongena</i>	Bou Keo	Houay Xay	Noung Khone	20 23 17 71	100 34 56 69	417	farmland	landrace	Mak kur
72	258493	30069745	COL/LAOS/2016/NIVFS/072	15-Nov	<i>Solanum aethiopicum</i>	Bou Keo	Houay Xay	Noung Khone	20 23 17 71	100 34 56 69	417	farmland	landrace	Mak koe
73	258494	30069746	COL/LAOS/2016/NIVFS/073	15-Nov	<i>Solanum aethiopicum</i>	Bou Keo	Houay Xay	Noung Khone	20 23 17 71	100 34 56 69	417	farmland	landrace	Mak hai
74	258495	30069747	COL/LAOS/2016/NIVFS/074	15-Nov	<i>Solanum melongena</i>	Bou Keo	Houay Xay	Peion Sain	20 23 03 32	100 34 51 23	426	backyard	landrace	Mak koe
75	258496	30069748	COL/LAOS/2016/NIVFS/075	15-Nov	<i>Solanum melongena</i>	Bou Keo	Houay Xay	Peion Sain	20 23 04 12	100 34 52 42	417	backyard	landrace	Mak koe
76	258497	30069749	COL/LAOS/2016/NIVFS/076	15-Nov	<i>Solanum macrocarpon</i>	Bou Keo	Houay Xay	Dand Poue	20 21 50 80	100 33 52 47	436	backyard	landrace	Mak koue kam
77	258498	30069750	COL/LAOS/2016/NIVFS/077	15-Nov	<i>Solanum melongena</i>	Bou Keo	Houay Xay	Dand Poue	20 21 49 50	100 33 51 44	435	backyard	landrace	Mak keoe
78	258499	30069751	COL/LAOS/2016/NIVFS/078	15-Nov	<i>Solanum melongena</i>	Bou Keo	Houay Xay	Dand Poue	20 21 52 19	100 33 52 24	435	backyard	landrace	Mak keur
79	258500	30069752	COL/LAOS/2016/NIVFS/079	15-Nov	<i>Solanum melongena</i>	Bou Keo	Houay Xay	Dand Poue	20 21 53 46	100 33 54 27	424	backyard	landrace	Mak kew honne
80	258501	30069753	COL/LAOS/2016/NIVFS/080	15-Nov	<i>Solanum melongena</i>	Bou Keo	Houay Xay	Dand Poue	20 21 53 46	100 33 54 27	424	backyard	landrace	Mak keoe
81	258502	30069754	COL/LAOS/2016/NIVFS/081	15-Nov	<i>Solanum melongena</i>	Bou Keo	Ton Pheung	She Meunggen	20 18 25 72	100 10 06 25	367	backyard	landrace	Mak keur
82	258503	30069755	COL/LAOS/2016/NIVFS/082	15-Nov	<i>Solanum melongena</i>	Bou Keo	Ton Pheung	She Meunggen	20 18 25 72	100 10 06 25	367	backyard	landrace	Mak keur

Table 4. (Continued).

Collection No	JP No	Passport No	JP Name	Date	Genus and species	Province/State	District	Village	North latitude	East longitude	Elevation (m)	Source (Market name)	Status	Local name
83	258504	30069756	COL/LAOS/2016/NIVFS/083	15-Nov	<i>Solanum melongena</i>	Bou Keo	Ton Pheung	She Meunggen	20 18 25 72	100 10 06 25	367	backyard	landrace	Mak kaur
84	258505	30069757	COL/LAOS/2016/NIVFS/084	16-Nov	<i>Solanum melongena</i>	Bou Keo	Meung	Larn Khoum Meung	20 44 07 75	100 27 23 78	601	backyard	landrace	Mak ker
85	258506	30069758	COL/LAOS/2016/NIVFS/085	16-Nov	<i>Solanum melongena</i>	Bou Keo	Meung	Larn Khoum Meung	20 44 08 16	100 27 22 71	601	backyard	landrace	Mak kur
86	258507	30069759	COL/LAOS/2016/NIVFS/086	16-Nov	<i>Solanum aethiopicum</i>	Bou Keo	Meung	Larn Khoum Meung	20 44 08 16	100 27 22 71	601	backyard	landrace	Mak ker
87	258508	30069760	COL/LAOS/2016/NIVFS/087	16-Nov	<i>Solanum melongena</i>	Bou Keo	Meung	Phoum Savang	20 44 39 80	100 28 22 32	634	farmland	landrace	Mak heir
88	258509	30069761	COL/LAOS/2016/NIVFS/088	16-Nov	<i>Solanum melongena</i>	Bou Keo	Meung	Phoum Savang	20 44 40 59	100 28 29 86	640	farmland	landrace	Mak hei
89	258510	30069762	COL/LAOS/2016/NIVFS/089	16-Nov	<i>Solanum melongena</i>	Bou Keo	Meung	Phoum Savang	20 44 40 65	100 28 31 40	639	farmland	landrace	Mak hei
90	258511	30069763	COL/LAOS/2016/NIVFS/090	16-Nov	<i>Solanum melongena</i>	Bou Keo	Meung	Phoum Savang	20 44 41 58	100 28 30 04	641	farmland	landrace	Mak hei
91	258512	30069764	COL/LAOS/2016/NIVFS/091	16-Nov	<i>Solanum aethiopicum</i>	Bou Keo	Meung	Phoum Savang	20 44 41 58	100 28 30 04	641	farmland	landrace	Mak hei
92	258513	30069765	COL/LAOS/2016/NIVFS/092	16-Nov	<i>Solanum melongena</i>	Bou Keo	Meung	Nam Meung	20 43 36 80	100 27 30 08	583	farmland	landrace	Mak hei
93	258514	30069766	COL/LAOS/2016/NIVFS/093	16-Nov	<i>Solanum melongena</i>	Bou Keo	Meung	Nam Meung	20 43 34 59	100 27 29 43	580	farmland	landrace	Mak ker
94	258515	30069767	COL/LAOS/2016/NIVFS/094	16-Nov	<i>Solanum melongena</i>	Bou Keo	Meung	Nam Meung	20 43 34 69	100 27 29 92	578	farmland	landrace	Mak hei
95	258516	30069768	COL/LAOS/2016/NIVFS/095	16-Nov	<i>Solanum melongena</i>	Bou Keo	Meung	Nam Meung	20 43 31 11	100 27 29 54	578	farmland	landrace	Mak hei
96	258517	30069769	COL/LAOS/2016/NIVFS/096	16-Nov	<i>Solanum aethiopicum</i>	Bou Keo	Meung	Houayt Tant	20 42 36 76	100 26 31 23	609	farmland	landrace	Mak hei
97	258518	30069770	COL/LAOS/2016/NIVFS/097	17-Nov	<i>Solanum melongena</i>	Bou Keo	Pha Oudom	Pang Thoung	20 07 06 38	100 46 59 04	385	farmland	landrace	Mak ker
98	258519	30069771	COL/LAOS/2016/NIVFS/098	17-Nov	<i>Solanum melongena</i>	Bou Keo	Pha Oudom	Pang Thoung	20 07 07 28	100 46 58 69	380	farmland	landrace	Mak ker
99	258520	30069772	COL/LAOS/2016/NIVFS/099	17-Nov	<i>Solanum melongena</i>	Bou Keo	Pha Oudom	Pang Thoung	20 07 07 28	100 46 58 69	380	farmland	landrace	Mak ker
100	258521	30069773	COL/LAOS/2016/NIVFS/100	17-Nov	<i>Solanum melongena</i>	Bou Keo	Pha Oudom	Pang Thoung	20 07 07 28	100 46 58 69	380	farmland	landrace	Mak ker
101	258522	30069774	COL/LAOS/2016/NIVFS/101	17-Nov	<i>Solanum melongena</i>	Bou Keo	Pha Oudom	Pang Thoung	20 07 07 28	100 46 58 69	380	farmland	landrace	Mak ker
102	258523	30069775	COL/LAOS/2016/NIVFS/102	17-Nov	<i>Solanum melongena</i>	Bou Keo	Pha Oudom	Pang Thoung	20 07 07 28	100 46 58 69	380	farmland	landrace	Mak ker
103	258524	30069776	COL/LAOS/2016/NIVFS/103	17-Nov	<i>Solanum melongena</i>	Bou Keo	Pha Oudom	Pang Thoung	20 07 07 28	100 46 58 69	380	farmland	landrace	Mak ker
104	258525	30069777	COL/LAOS/2016/NIVFS/104	17-Nov	<i>Solanum melongena</i>	Bou Keo	Pha Oudom	Pang Thoung	20 07 11 50	100 46 58 30	389	farmland	landrace	Mak ker
105	258526	30069778	COL/LAOS/2016/NIVFS/105	17-Nov	<i>Solanum melongena</i>	Bou Keo	Pha Oudom	See Boun Houng	20 04 26 72	100 49 16 83	417	farmland	landrace	Mak ker
106	258527	30069779	COL/LAOS/2016/NIVFS/106	17-Nov	<i>Solanum melongena</i>	Bou Keo	Pha Oudom	See Boun Houng	20 04 26 72	100 49 16 83	417	farmland	landrace	Mak ker
107	258528	30069780	COL/LAOS/2016/NIVFS/107	17-Nov	<i>Solanum melongena</i>	Bou Keo	Pha Oudom	See Boun Houng	20 04 24 36	100 49 17 81	413	farmland	landrace	Mak ker
108	258529	30069781	COL/LAOS/2016/NIVFS/108	17-Nov	<i>Solanum melongena</i>	Bou Keo	Pha Oudom	See Boun Houng	20 04 24 36	100 49 17 81	413	farmland	landrace	Mak ker



Photo 1. Mountainous region in Nalae District



Photo 2. Car rented during the survey



Photo 3. Commercial eggplants grown from seeds imported from China or Thailand at a market in Ban Namchang



Photo 4. Survey of eggplants at a farmer's stall on the way to Luang Namtha



Photo 5. *Solanum torvum* growing in a garden in Ban Phon Saxsayan (No. 5)



Photo 6. Interviewing local people in Ban Pou Phat



Photo 7. Interviewing local people in Ban Lank Kham



Photo 8. Discussion with the deputy director of the Horticultural Research Center



Photo 9. Drying of seeds extracted from the accessions collected during the survey



Photo 10. Reporting our preliminary results to staff of the Horticultural Research Center



Photo 11. Large Chinese-owned plantations of common bean on the way to Luang Namtha



Photo 12. Discussion with staff of the Province Agriculture and Forestry Office of Luang Namtha



Photo 13. Fruits of eggplant collected in Ban Phon Saxsayan (No. 4)



Photo 14. Fruits of *Solanum torvum* collected in Ban Phon Saxsayan (No. 5)



Photo 15. Fruits of *Solanum violaceum* collected in Ban Naleu (No. 10)



Photo 16. Fruits of eggplant collected in Ban Namtung (No. 12)



Photo 17. Fruits of eggplant collected in Ban Namtung (No. 13)



Photo 18. Fruits of eggplant collected in Ban Namtung (No. 18)



Photo 19. The District Agriculture and Forestry Office of Vieng Phoukha



Photo 20. Survey of eggplants in a field in Ban Vieng Savang



Photo 21. *Solanum violaceum* growing in a garden in Ban Vieng Savang (No. 21)

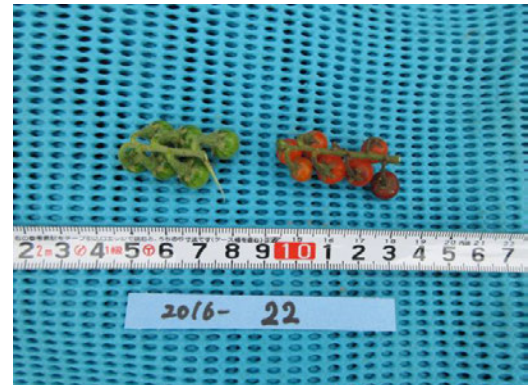


Photo 22. Fruits of *Solanum violaceum* collected in Ban Vieng Savang (No. 22)



Photo 23. Fruits of *Solanum aethiopicum* collected in Ban Vieng Savang (No. 23)



Photo 24. Fruits of eggplant collected in Ban Nam Par (No. 29)

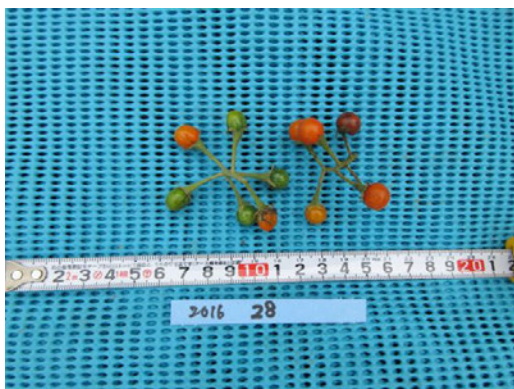


Photo 25. Fruits of *Solanum violaceum* collected in Ban Nam Par (No. 28)



Photo 26. Fruits of eggplant collected in Ban Vieng Savang (No. 34)



Photo 27. Extracting and drying seeds from rotten fruits at a guesthouse

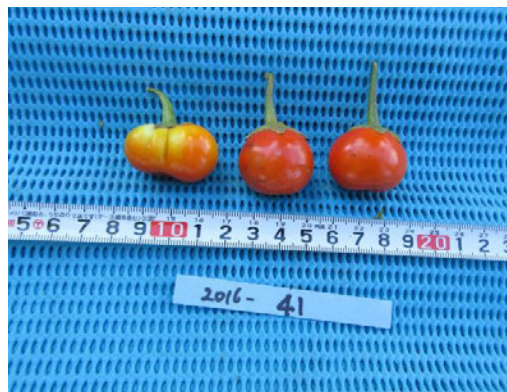


Photo 28. Fruits of *Solanum aethiopicum* collected in Ban Nang Bou (No. 41)



Photo 29. Immature fruits of eggplant collected in Ban Lank Khame (No. 50). Seeds were extracted from rotten fruit.



Photo 30. Border between Laos and China



Photo 31. Large Chinese-owned plantations of banana in Ban Nam da Mai, near the border with China, on the way to Luang Namtha



Photo 32. Fruits of *Solanum aethiopicum* collected in Ban Lak Khane Mai Kh (No. 54)



Photo 33. Fruits of eggplant collected in Ban Hat Na Leng (No. 58)



Photo 34. Fruits, flower, and leaves of eggplant collected in Ban Hat Na Leng (No. 62)



Photo 35. Eggplants smoked for preservation of seeds in Ban Pou Phat (Nos. 65–67)



Photo 36. Discussion with the deputy director of the Province Agriculture and Forestry Office of Bou Keo

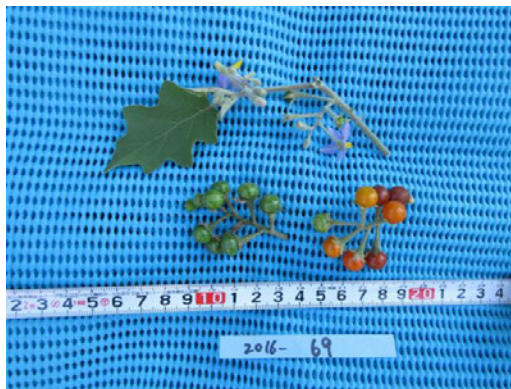


Photo 37. Fruits, flowers, and leaves of *Solanum violaceum* collected in Ban Nong Khon (No. 69)



Photo 38. Fruits of *Solanum aethiopicum* collected in Ban Nong Khon (No. 72)



Photo 39. Discussion with the director of the Province Agriculture and Forestry Office of Bou Keo



Photo 40. Donsao, on the borders with Myanmar and China



Photo 41. Fruits, flowers, and leaves of eggplant collected in Ban She Meunggen (No. 81)



Photo 42. Discussion with the director of the District Agriculture and Forestry Office of Meung District



Photo 43. District Agriculture and Forestry Office staff of Meung District



Photo 44. A fruit of eggplant collected in Ban Phoum Savang (No. 89)



Photo 45. Discussion with staff of the District Agriculture and Forestry Office of Pha Oudom District

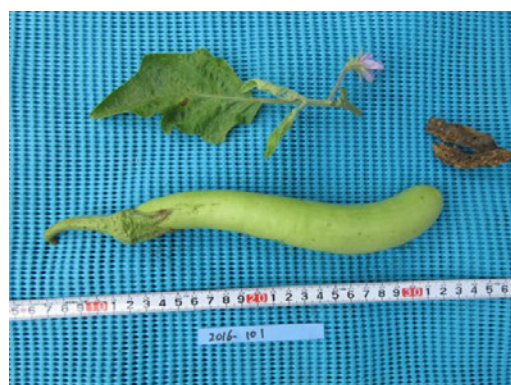


Photo 46. Flower, leaves, immature fruit, and smoked fruits in Ban Pang Thoung (No. 101)



Photo 47. Farewell dinner with staff, including the deputy director, of the Horticultural Research Center in Vientiane



Photo 48. Many commercial vegetable seeds imported from China at a market in Ban Namchang