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Original Paper

Collaborative Survey of Eggplant Genetic Resources in Laos, 2015

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Summary

Under a Memorandum of Understanding, the National Institute of Agrobiological Sciences (Japan) and the National Agriculture and Forestry Research Institute (NAFRI), Lao People's Democratic Republic (Laos) have collaborated since 2006 to survey plant genetic resources in Laos. The main objective of the current survey was to collect accessions of eggplant (*Solanum melongena* L.) and related crop species from the northern provinces of Oudomxai and Phongsaly in Laos. From 9th to 25th November 2015, we collected a total of 124 accessions, including 101 *S. melongena* accessions and 23 accessions of other *Solanum* spp. We discovered a wide diversity of eggplant landraces in northern Laos, with variation in fruit shape (elongated, round, and flattened), length (21-600 mm), and color (purple, green, and white), and spineless landraces were popular. 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*, vegetable, Laos, NAFRI, HRC, NIAS, NIVTS

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 (Laos) have collaborated since 2006 to survey plant genetic resources in Laos. This report describes the fifth survey under this Memorandum, which is also the second survey in the PGRAsia project, to collect vegetable accessions. Reports for the 2007, 2008, 2009, and 2014 surveys have been published previously[1)-4)]. In 2014, 134 eggplant (*Solanum* spp., including wild relatives) accessions were collected from the northern provinces of Houaphan and Xiengkhouang in Laos. Northern Laos is mountainous (Photo 1) and is home to many minorities; at least 48 ethnic tribes live in Laos[5)]. The logistics of accessing and interacting with minorities are difficult, so it is likely that many undescribed landraces are maintained in this region. In the present survey, we collected new accessions from the provinces of Oudomxai and Phongsaly. We surveyed many villages and collected genetic resources of both eggplants and related species.

Methods

Prior to the survey, Dr. Sisaphaithong collected information on eggplant genetic resources in the provinces of Oudomxai and Phongsaly. On the basis of this information, we surveyed the area for new *Solanum* accessions from 9th to 25th November 2015 (Table 1, Fig. 1). We rented a car (Photo 2) to visit local markets and farmers' stores, homes, and fields to obtain samples of fruits or seeds, and after confirming the 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. We attempted to collect landraces only. On 10th November 2015, we visited the HRC and explained the objectives and plan of our survey to the director, Dr. Bounneuang Douangboupha, and staff members (Photo 3). On 23rd November 2015, we revisited the HRC, extracted seeds from the accessions, and reported our preliminary results.

Table 1. Itinerary followed during the 2015 survey in northern Laos

Date	Day	Itinerary	Stay	Distance covered (km)
9-Nov	Mon	Chubu 11:00 (TG645) -- 15:40 Bangkok Bangkok 19:35 (TG574) -- 20:45 Vientiane	Vientiane	
10-Nov	Tue	Markets in Vientiane, visit Horticultural Research Center (HRC), explain and discuss the survey	Vientiane	32
11-Nov	Wed	Vientiane -- Van Vieng -- Phou Khoun -- Luang Prabang	Luang Prabang	382
12-Nov	Thu	Luang Prabang -- Pakmong -- Oudomxai	Oudomxai	204
13-Nov	Fri	Oudomxai -- Muang Beng -- Ban Donkon	Ban Donkon	109
14-Nov	Sat	Ban Donkon -- Muang Houn -- Oudomxai	Oudomxai	138
15-Nov	Sun	Oudomxai -- Pak Nam Noi -- Boun Tai -- Boun Neua -- Phongsaly	Phongsaly	253
16-Nov	Mon	Phongsaly	Phongsaly	54
17-Nov	Tue	Phongsaly -- Boun Neua	Boun Neua	65
18-Nov	Wed	Boun Neua -- Boun Tai	Boun Tai	77
19-Nov	Thu	Boun Tai -- Pak Nam Noi -- Muang Khua	Muang Khua	134
20-Nov	Fri	Muang Khua -- Pak Nam Noi -- Oudomxai -- Pakmong -- Luang Prabang	Luang Prabang	315
21-Nov	Sat	Luang Prabang , Data arrangement	Luang Prabang	
22-Nov	Sun	Luang Prabang -- Van Vieng -- Vientiane	Vientiane	334
23-Nov	Mon	Vientiane, Data arrangement, visit HRC and report the preliminary results of survey	Vientiane	32
24-Nov	Tue	Vientiane 21:40 (TG575) -- 22:45 Bangkok	on flight	(Total 2129)
25-Nov	Wed	Bangkok 00:05 (TG644) -- 07:30 Chubu		

Results

We traveled and surveyed more than 2100 km (Table 1) and collected a total of 124 accessions from seven districts (21 villages) in the two provinces (Table 2). The accessions included 101 *Solanum melongena* L. samples, seven *Solanum aethiopicum* L. samples, five *Solanum torvum* Sw. samples, four *Solanum macrocarpon* L. samples, one *Solanum sanitwongsei* Craib.sample, one *Solanum viarum* Dunal sample, and five unidentified *Solanum* spp. (Tables 3 and 4). Following the survey, the seeds were kept at the HRC, and after the seeds are propagated and the accessions are characterized, the seeds will be shared equally between the NIAS and HRC. The remainder of this section describes the day-to-day detailes of our survey. All the collected accessions were mature *S. melongena* fruits, unless stated otherwise.

11th November: We traveled from Vientiane, *via* Van Vieng, Kasi, Phou Khoun, and Xiang Ngeun, to Luang Prabang on Routes 13N and 13. The road conditions between Vientiane and Van Vieng were 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 were offer. The journey took about 9 h.

12th November: We traveled from Luang Prabang, *via* Pakmong, to Oudomxai on Route 13N. The journey took about 7 h. We visited the Province Agriculture and Forestry Office (PAFO) of Oudomxai and explained our plans and objectives to the head of agriculture, Mr. Khamphao Boundala (Photo 4). The director decided that a PAFO staff member would assist with our survey of Oudomxai Province and that various staff members of the District Agriculture and Forestry Office (DAFO) would assist with the district surveys.

13th November: We revisited the PAFO of Oudomxai, where a PAFO staff member joined us. We visited a small market in the village of Ban Thin, where we collected information on eggplant production and two accessions (Nos. 1 and 2). We found beautiful uniform eggplants (Photo 5) but did not collect them since they were commercial cultivars grown from seeds that were imported from China (Photo 6). At the village of Ban Lak 4, we surveyed (Photo 7) and collected three accessions (Nos. 3-5), although No. 4, which produced bitter fruits, was an uncharacterized *Solanum* sp. (Photo 8). We also collected three accessions (Nos. 6-8) from a nearby house (Photos 9 and 10), where they were grown for home use. The farmer reperted that the fruit with a spineless calyx was usually eaten raw and that fruit with a spiny calyx was cooked. In the same village, we also collected a spineless plant (No. 9) that bore round, green fruits that were grown for sale. The farmer explained that seeds are sown in one field in December, the seedlings are transplanted to another field, and the fruits are usually harvested from April to November. Seeds are extracted from mature fruits that exhibited desirable characteristics when they were immature (Photo 11). Pesticides are't used because soilborne diseases do not cause severe problems, and insects are remove by hand. Chinese-owned plantations that export banana, corn (maize), and watermelon to China have recently increased in this area, and as a consequence, the production of traditional upland rice and vegetables has decreased, causing concern for the farmers. From this area, we traveled to the village of Begkham, *via* Route 2W, and visited the DAFO of Beng district. We explained our survey to the head of agriculture and then surveyed the village of Ban Yan with a DAFO staff member (Photo 12). We found an unidentified *Solanum* plant, probably *S. viarum*, which is a common inedible weed in Southeast Asia, growing along

the road. In the same village, we collected four accessions (Nos. 10-13). Then, in the village of Ban Xieng Lae, we collected a round, green fruit (No. 14) that was borne on a spiny plant. This village also featured large Chinese-owned plantations of banana and watermelon (Photo 13), as well as greenhouses for raising watermelon seedlings.

14th November: We traveled to the Houn district *via* Route 2W. The journey took 4 h. At the DAFO, we explained our survey, and a DAFO staff member joined us. We surveyed the village of Ban Nakhong (Photo 14) and collected 11 accessions (Nos. 15-25; Photo 15) from a field where a famer appeared to be intentionally planting various types of eggplants to test their adaptation to environmental change. In the same village, we collected three other accessions (Nos. 26-28) but were unable to collect seeds from a landrace with fruits that were similar to those of the famous Black Beauty because no fruits were mature. One of the accessions (No. 28) was not identified but was probably *S. macrocarpon*. After lunch (Photo 16), we surveyed the Hmong village of Ban Nong Bounadeng (Photo 17) and collected six accessions (Nos. 29-34; Photo 18). Many plants with black-purple fruits were growing in a burnt field, but we could not collect seeds because no fruits were mature. The farmer said that burnt fields are not used for continuous upland rice cultivation, owing to weed problems, and that, instead, fields are left fallow for 3 years and then burnt, after which a single rice crop is grown and the field is again left fallow. One of the accessions (No. 33) was not identified but was probably *S. torvum*. Later, we extracted seeds from rotten fruits that we had collected.

15th November: We traveled to Phongsaly *via* Routes 2E, 1B, and 19. On the way, we passed large Chinese-owned plantations of tomato, pea, and corn that were being grown for export to China. The road conditions between Pak Nam Noi and Phongsaly were bad; most of the roads through the mountains were unpaved. On the way to Phongsaly, we collected one accession of *S. aethiopicum* (No. 35; Photo 19) at a shop (Photo 20), but the fruits were too immature for us to extract seeds. The journey to Phongsaly took 8 h.

16th November: In Phongsaly, we visited a market (Photo 21) and collected one accession of *S. aethiopicum* (or *S. gilo*) that had orange fruit (No. 36). Afterward, we visited the Phongsaly PAFO office (Photo 22) and explained our survey. The head assigned staff members to help us, and a staff member of the Phoungary DAFO also joined us. The head told us that vegetable genetic resources in Phongsaly Province have been decreasing rapidly and, therefore, that it was very important to collect them as soon as possible. We surveyed (Photo 23) and collected six accessions (Nos. 37-42) in the Punoi village of Ban Pangsan. Several accessions (Nos. 37 and 38) were collected as fruits that had been preserved by smoking above a fireplace (Photo 24). In addition, one (No. 40) was identified as *S. macrocarpon* and bore purple flowers, and two others (Nos. 41 and 42) were identified as *S. aethiopicum* and *S. torvum*, respectively (Photos 25 and 26). In the village of Ban Vang Xai, we surveyed (Photo 27) and collected seven accessions (Nos. 43-49), and we also collected four accessions (Nos. 50-53) from the neighboring village of Ban Namsa (Photo 28), where a famer told us that two smoked samples (Nos. 52 and 53) could reach ~60 and ~20 cm long, respectively, under favorable conditions.

17th November: We visited the DAFO of the Boun Neua district and explained our survey (Photo 29). A DAFO staff member joined us, and the head reported that there were four tribes in the area. In the Kamu

village of Ban Nalae, we collected seven accessions (Nos. 54-60). Of these, one (No. 57) was collected as fruit that had dropped and dried naturally (Photo 30), and another (No. 60) exhibited the typical color, size, and shape of fruit from northern Laos (Photo 31). In the fields, we found two types of eggplant; one that was black-purple and oblong, probably a Chinese commercial cultivar; and another that was green and oblong. However, we were unable to collect seeds and mature fruit because there were no farmers present, who could provide permission. Meanwhile, in the village of Ban Bounpheaung, we collected five accessions (Nos. 61-65; Photo 32). Several tribes, including the Punoi and Lu, live there. One of the accessions (No. 62) was probably *S. torvum*, and another (No. 64) only bore mature fruits so the characteristics of the immature fruits are unknown. In the village of Ban Phiengdokkham, we collected six accessions from the Lao tern (Nos. 66-71) and one accession from the Akha (No. 72). Two of the accessions (Nos. 68 and 69) were probably *S. sanitwongsei* (edible leaves) and *S. macrocarpon* (edible fruits), respectively, and the parent plant of one accession (No. 70) was 2 years old.

18th November: We visited the DAFO of the Boun Tai district in the village of Ban Phothong and explained our survey (Photo 33). A DAFO staff member joined us, and we collected an accession (No. 73) near the office. Afterward, we walked to Ban Phothong, where several tribes live, and collected ten accessions (No. 74-83). One of the accession (No. 75) was identified as *S. aethiopicum* or *S. gilo*; its immature fruits were green and oblong. Another (No. 78) was identified as *S. macrocarpon* (Photo 34), and one (No. 79) was identified as *S. aethiopicum*; its fruit was purple. Accession No. 80 was collected as a dropped fruit that was rotten (Photo 35). Interestingly, the parent plant of accession No. 81 was 4 years old (Photo 36), as farmers in the area often prune back and maintain eggplant bushes for several years. Accession No. 83 was identified as *S. torvum.* In the village of Ban Nonbounkang, we collected six accessions (No. 84-89). Of these, two accessions (Nos. 87 and 88) were probably *S. sanitwongsei* (Photo 37) and *S. aethiopicum*, respectively. We also observed many Chinese-owned fields of French beans, which Lao farmers grew for export to China using mulches, inorganic fertilizers, and pesticides that were imported from China. After lunch, one accession (No. 90) was collected in the town. In the village of Ban Bountai, we collected one accession (No. 91), and across the river, in the village of Ban Bounyan, we collected nine accessions (No. 92-100; Photos 38-40). Three of the accessions (Nos. 95, 97, and 99) were probably *S. torvum*, *S. sanitwongsei* (with strong spines), and *S. aethiopicum*, respectively. We also observed a plant that bore long, green fruits but were unable to collect them because no farmers were present to give us permission.

19th November: In the villge of Ban Sanomai in the Boun Tai district, we collected one accession (No. 101; Photo 41) of what was probably *S. viarum*. In the village of Ban Sopkai in the Khua district, we collected six accessions (Nos. 102-107; Photos 42 and 43), of which one (No. 102) was an unidentified *Solanum* sp. and another (No. 106) was probably *S. aethiopicum* since it bore large, flattened, white-green fruits. At Muang Khua, we visited the DAFO of the Khua district and explained our survey (Photo 44). A staff member joined us, and we collected four accessions (Nos. 122-125). In the village of Ban Tabuk, we collected six accessions (Nos. 108-113). Of these, one (No. 112) was an unidentified *Solanum* sp., the leaves and immature fruits of which were edible but bitter (Photo 45). At the village of Ban Hatdean, we collected eight accessions (Nos. 114-121). Later, we extracted seeds from rotten fruits.

20th November: We returned to Luang Prabang on Routes 2E and 13N. The journey took about 8 h. Later,

we extracted seeds from rotten fruits.

21st November: We arranged the data and photos.

22nd November: We traveled from Luang Prabang, *via* Xiang Ngeun, Poungdong, Kasi, Vang Vieng, Thahua, and Phonhong, to Vientiane on Routes 13N and 4 and a new road. The journey took 9 h.

23rd November: We arranged the data and photos in the morning and returned to HRC in the afternoon to report our preliminary results. The HRC members of our team extracted seeds from our collected fruits and dried them.

Discussion

Our collection of seeds from numerous eggplant landraces in the provinces of Oudomxai and Phongsaly was facilitated by the widespread availability of mature fruits in backyards, fields, and markets, as we previously found in the provinces of Houaphan and Xiengkhouang during our survey in 2014[4]. We were unable to communicate directly with the different ethnic groups, but the PAFO and DAFO staff acted as translators. In other countries, it is the flesh and skin of immature eggplants that are generally eaten. However, we found that people in northern Laos also eat the skin, but not the flesh, of mature fruits (Photo 46). We discovered that the eggplants of Oudomxai and Phongsaly were widely variable in shape (elongated, round, or slightly flattened), length (21-600 mm), and color (purple, green, and white; Table 4, Fig. 2) and that spineless landraces were popular, as in Houaphan and Xiengkhouang. We will have to test the genetic diversity among collected accessions using DNA markers.

Although we focused on *S. melongena*, we also collected samples of *S. aethiopicum* (or *S. gilo*), *S. macrocarpon*, *S. sanitwongsei*, and *S. viarum*. These species are primarily used medicinally but are also edible. The Lao sometimes eat the raw fruits, but the Japanese researchers found them too bitter.

We observed many large Chinese-owned plantations, where farmers used inorganic fertilizers and pesticides that were imported from China. The PAFO and DAFO staff members were worried about the environmental harm caused by these chemicals (personal communication from staff). Many Lao prefer organically grown foods (Photos 47 and 48), and the number of organic farmers is increasing. However, it is difficult to grow organic crops, and both new cultivating methods and improved cultivars are needed. The HRC staff would like 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 cooperations with the HRC staff, and we plan to train the staff to evaluate eggplant genetic resources and breed new cultivars. Seeds will be produced by self-pollination, and the HRC staff will evaluate the materials in the following season. The seeds produced at the HRC will be shared between Laos and Japan. We aslo plan to evaluate the morphological characteristics and resistance of the accessions to Verticillium wilt, bacterial wilt, Fusarium wilt, and nematodes in Japan.

Acknowledgments

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ラオスにおけるナス遺伝資源の共同探索 , 2015 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 2015 年の野菜遺伝資源の調査報告である．調査は，2015 年 11 月 9 ～ 25 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ウドムサイ県およびポンサリー県を調査した．ナス栽培種 *Solanum melongena* を 101 点およびナス近縁種を 23 点の合計 124 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 2. Accessions collected during the 2015 survey in northern Laos

Province	District	No. of villages	*Solanum melongena*	*S. aethio-picum*	*S. torvum*	*S. macro-carpon*	*S. sanit-wongsei*	*S. viarum*	*Solanum* spp.	Total
Oudomxai	Xai	2	8	0	0	0	0	0	1	9
Oudomxai	Beng	2	5	0	0	0	0	0	0	5
Oudomxai	Houn	2	18	0	1	1	0	0	0	20
Phongsaly	Phongsaly	4	14	2	1	1	0	0	0	18
Phongsaly	Boun Neua	3	16	0	1	1	0	0	1	19
Phongsaly	Boun Tai	5	19	4	2	1	1	1	1	29
Phongsaly	Khua	3	21	1	0	0	0	0	2	24
Total		21	101	7	5	4	1	1	5	124

Table 3. List of material collected during the 2015 survey in northern Laos

Coll. No.	Passport No.	JP No.	JP Name	Date	Genus and species	Province/ State	District	Village	North latitude	East longitude	Elevation (m)	Source (Market name)	Status	Local name
1	30064880	255069	COL/LAOS/2015/NIVTS/001	13-Nov	*Solanum melongena*	Oudomxai	Xai	B. Thin	26.41.25.21	101.58.45.14	645	village market	landrace	Mak kheua kang kop
2	30064881	255070	COL/LAOS/2015/NIVTS/002	13-Nov	*Solanum melongena*	Oudomxai	Xai	B. Thin	26.41.25.21	101.58.45.14	645	village market	landrace	Mak kheua ham hue
3	30064882	255071	COL/LAOS/2015/NIVTS/003	13-Nov	*Solanum melongena*	Oudomxai	Xai	B. Lak 4	20.42.19.39	101.58.25.01	651	backyard	landrace	Mak kheua heun
4	30064883	255072	COL/LAOS/2015/NIVTS/004	13-Nov	*Solanum* sp.	Oudomxai	Xai	B. Lak 4	20.42.19.39	101.58.25.01	651	backyard	landrace	Mak keng khom
5	30064884	255073	COL/LAOS/2015/NIVTS/005	13-Nov	*Solanum melongena*	Oudomxai	Xai	B. Lak 4	20.42.19.75	101.58.24.67	650	backyard	landrace	Mak kheua khao
6	30064885	255074	COL/LAOS/2015/NIVTS/006	13-Nov	*Solanum melongena*	Oudomxai	Xai	B. Lak 4	20.42.19.01	101.58.22.75	650	backyard	landrace	Mak kheua heun
7	30064886	255075	COL/LAOS/2015/NIVTS/007	13-Nov	*Solanum melongena*	Oudomxai	Xai	B. Lak 4	20.42.19.01	101.58.22.75	650	backyard	landrace	Mak kheua heun
8	30064887	255076	COL/LAOS/2015/NIVTS/008	13-Nov	*Solanum melongena*	Oudomxai	Xai	B. Lak 4	20.42.19.01	101.58.22.75	650	backyard	landrace	Mak kheua heun
9	30064888	255077	COL/LAOS/2015/NIVTS/009	13-Nov	*Solanum melongena*	Oudomxai	Xai	B. Lak 4	20.42.15.81	101.58.24.40	643	backyard	landrace	Mak kheua vieng
10	30064889	255078	COL/LAOS/2015/NIVTS/010	13-Nov	*Solanum melongena*	Oudomxai	Beng	B. yan	20.18.54.35	101.39.18.05	541	backyard	landrace	Mak kheua heun
11	30064890	255079	COL/LAOS/2015/NIVTS/011	13-Nov	*Solanum melongena*	Oudomxai	Beng	B. yan	20.20.39.88	101.40.48.55	547	backyard	landrace	Mak kheua pau
12	30064891	255080	COL/LAOS/2015/NIVTS/012	13-Nov	*Solanum melongena*	Oudomxai	Beng	B. yan	20.20.39.88	101.40.48.55	547	backyard	landrace	Mak kheua pau
13	30064892	255081	COL/LAOS/2015/NIVTS/013	13-Nov	*Solanum melongena*	Oudomxai	Beng	B. yan	20.20.38.78	101.40.53.49	548	backyard	landrace	Mak kheua kern
14	30064893	255082	COL/LAOS/2015/NIVTS/014	13-Nov	*Solanum melongena*	Oudomxai	Beng	B. xieng lae	20.21.50.55	101.41.08.07	538	backyard	landrace	Mak kheua kern
15	30064894	255083	COL/LAOS/2015/NIVTS/015	14-Nov	*Solanum melongena*	Oudomxai	Houn	B. nakhong	20.08.24.60	101.27.26.04	472	farmland	landrace	Mak kheua khao
16	30064895	255084	COL/LAOS/2015/NIVTS/016	14-Nov	*Solanum melongena*	Oudomxai	Houn	B. nakhong	20.08.24.60	101.27.26.04	472	farmland	landrace	Mak kheua yao
17	30064896	255085	COL/LAOS/2015/NIVTS/017	14-Nov	*Solanum melongena*	Oudomxai	Houn	B. nakhong	20.08.24.60	101.27.26.04	472	farmland	landrace	Mak kheua khao
18	30064897	255086	COL/LAOS/2015/NIVTS/018	14-Nov	*Solanum melongena*	Oudomxai	Houn	B. nakhong	20.08.24.60	101.27.26.04	472	farmland	landrace	Mak kheua ham hue
19	30064898	255087	COL/LAOS/2015/NIVTS/019	14-Nov	*Solanum melongena*	Oudomxai	Houn	B. nakhong	20.08.24.60	101.27.26.04	472	farmland	landrace	Mak kheua
20	30064899	255088	COL/LAOS/2015/NIVTS/020	14-Nov	*Solanum melongena*	Oudomxai	Houn	B. nakhong	20.08.24.60	101.27.26.04	472	farmland	landrace	Mak kheua
21	30064900	255089	COL/LAOS/2015/NIVTS/021	14-Nov	*Solanum melongena*	Oudomxai	Houn	B. nakhong	20.08.24.85	101.27.25.45	473	farmland	landrace	Mak kheua khang kop

Table 3 (Continued).

Coll. No.	Passport No.	JP No.	JP Name	Date	Genus and species	Province/ State	District	Village	North latitude	East longitude	Elevation (m)	Source (Market name)	Status	Local name
22	30064901	255090	COL/LAOS/2015/NIVTS/022	14-Nov	*Solanum melongena*	Oudomxai	Houn	B. nakhong	20.08.24.85	101.27.25.45	473	farmland	landrace	Mak kheua
23	30064902	255091	COL/LAOS/2015/NIVTS/023	14-Nov	*Solanum melongena*	Oudomxai	Houn	B. nakhong	20.08.25.95	101.27.26.67	474	farmland	landrace	Mak kheua la mang
24	30064903	255092	COL/LAOS/2015/NIVTS/024	14-Nov	*Solanum melongena*	Oudomxai	Houn	B. nakhong	20.08.25.95	101.27.26.67	474	farmland	landrace	Mak kheua
25	30064904	255093	COL/LAOS/2015/NIVTS/025	14-Nov	*Solanum melongena*	Oudomxai	Houn	B. nakhong	20.08.25.95	101.27.26.67	474	farmland	landrace	Mak kheua yao
26	30064905	255094	COL/LAOS/2015/NIVTS/026	14-Nov	*Solanum melongena*	Oudomxai	Houn	B. nakhong	20.08.20.94	101.27.26.55	470	farmland	landrace	Mak kheua khao
27	30064906	255095	COL/LAOS/2015/NIVTS/027	14-Nov	*Solanum melongena*	Oudomxai	Houn	B. nakhong	20.08.20.94	101.27.26.55	470	farmland	landrace	Mak kheua khang kop
28	30064907	255096	COL/LAOS/2015/NIVTS/028	14-Nov	*Solanum macrocarpon*	Oudomxai	Houn	B. nakhong	20.08.26.43	101.27.24.43	475	backyard	landrace	Mak kheua kham
29	30064908	255097	COL/LAOS/2015/NIVTS/029	14-Nov	*Solanum melongena*	Oudomxai	Houn	B. nong bouadeng	20.08.40.28	101.28.20.34	480	backyard	landrace	Mak kheua duria
30	30064909	255098	COL/LAOS/2015/NIVTS/030	14-Nov	*Solanum melongena*	Oudomxai	Houn	B. nong bouadeng	20.08.40.28	101.28.20.34	480	backyard	landrace	Mak kheua
31	30064910	255099	COL/LAOS/2015/NIVTS/031	14-Nov	*Solanum melongena*	Oudomxai	Houn	B. nong bouadeng	20.08.40.19	101.28.19.91	491	backyard	landrace	Mak kheua
32	30064911	255100	COL/LAOS/2015/NIVTS/032	14-Nov	*Solanum melongena*	Oudomxai	Houn	B. nong bouadeng	20.08.41.31	101.28.24.08	493	backyard	landrace	Mak kheua
33	30064912	255101	COL/LAOS/2015/NIVTS/033	14-Nov	*Solanum torvum*	Oudomxai	Houn	B. nong bouadeng	20.08.42.02	101.28.21.02	488	backyard	landrace	Mak keng
34	30064913	255102	COL/LAOS/2015/NIVTS/034	14-Nov	*Solanum melongena*	Oudomxai	Houn	B. nong bouadeng	20.08.42.02	101.28.21.02	488	backyard	landrace	Mak kheua
35	-	-	COL/LAOS/2015/NIVTS/035	15-Nov	*Solanum aethiopicum*	Phongsaly	Phongsaly	-	-	-		farmstore	landrace	-
36	30064914	255103	COL/LAOS/2015/NIVTS/036	16-Nov	*Solanum aethiopicum*	Phongsaly	Phongsaly	Phongsaly market	21.41.01.08	102.06.07.95	1395	village market	landrace	Mak kheua kham
37	30064915	255104	COL/LAOS/2015/NIVTS/037	16-Nov	*Solanum melongena*	Phongsaly	Phongsaly	B. Pangsan	21.43.30.43	102.09.53.26	855	farmstore	landrace	Mak kheua jayao (Black)
38	30064916	255105	COL/LAOS/2015/NIVTS/038	16-Nov	*Solanum melongena*	Phongsaly	Phongsaly	B. Pangsan	21.43.30.43	102.09.53.26	855	farmstore	landrace	Mak kheua jayao (Green)
39	30064917	255106	COL/LAOS/2015/NIVTS/039	16-Nov	*Solanum melongena*	Phongsaly	Phongsaly	B. Pangsan	21.43.34.47	102.09.56.65	843	backyard	landrace	Mak kheua jayao
40	30064918	255107	COL/LAOS/2015/NIVTS/040	16-Nov	*Solanum macrocarpon*	Phongsaly	Phongsaly	B. Pangsan	21.43.34.47	102.09.56.65	843	backyard	landrace	Mak kheua kha

Table 3 (Continued).

Coll. No.	Passport No.	JP No.	JP Name	Date	Genus and species	Province/ State	District	Village	North latitude	East longitude	Elevation (m)	Source (Market name)	Status	Local name
41	30064919	255108	COL/LAOS/2015/NIVTS/041	16-Nov	*Solanum aethiopicum*	Phongsaly	Phongsaly	B. Pangsan	21.43.34.47	102.09.56.65	843	backyard	landrace	Mak kheua arkha
42	30064920	255109	COL/LAOS/2015/NIVTS/042	16-Nov	*Solanum torvum*	Phongsaly	Phongsaly	B. Pangsan	21.43.33.95	102.09.55.98	843	backyard	landrace	Mak keng
43	30064921	255110	COL/LAOS/2015/NIVTS/043	16-Nov	*Solanum melongena*	Phongsaly	Phongsaly	B. Vangxai	21.43.51.02	102.12.23.11	477	backyard	landrace	Mak kheua bonjer
44	30064922	255111	COL/LAOS/2015/NIVTS/044	16-Nov	*Solanum melongena*	Phongsaly	Phongsaly	B. Vangxai	21.43.51.02	102.12.23.11	477	backyard	landrace	Mak kheua jamon
45	30064923	255112	COL/LAOS/2015/NIVTS/045	16-Nov	*Solanum melongena*	Phongsaly	Phongsaly	B. Vangxai	21.43.51.02	102.12.23.11	477	backyard	landrace	Mak kheua kayan
46	30064924	255113	COL/LAOS/2015/NIVTS/046	16-Nov	*Solanum melongena*	Phongsaly	Phongsaly	B. Vangxai	21.43.51.02	102.12.23.11	477	backyard	landrace	Mak kheua kayan
47	30064925	255114	COL/LAOS/2015/NIVTS/047	16-Nov	*Solanum melongena*	Phongsaly	Phongsaly	B. Vangxai	21.43.53.88	102.12.21.63	481	backyard	landrace	Mak kheua yam
48	30064926	255115	COL/LAOS/2015/NIVTS/048	16-Nov	*Solanum melongena*	Phongsaly	Phongsaly	B. Vangxai	21.43.53.88	102.12.21.63	481	backyard	landrace	Mak kheua mujer
49	30064927	255116	COL/LAOS/2015/NIVTS/049	16-Nov	*Solanum melongena*	Phongsaly	Phongsaly	B. Vangxai	21.43.53.22	102.12.23.30	463	backyard	landrace	Mak kheua kin
50	30064928	255117	COL/LAOS/2015/NIVTS/050	16-Nov	*Solanum melongena*	Phongsaly	Phongsaly	B. Namsa	21.44.19.24	102.12.24.91	463	backyard	landrace	Mak kheua yam
51	30064929	255118	COL/LAOS/2015/NIVTS/051	16-Nov	*Solanum melongena*	Phongsaly	Phongsaly	B. Namsa	21.44.19.24	102.12.24.91	463	backyard	landrace	Mak kheua yamsi
52	30064930	255119	COL/LAOS/2015/NIVTS/052	16-Nov	*Solanum melongena*	Phongsaly	Phongsaly	B. Namsa	21.44.19.24	102.12.24.91	463	farmstore	landrace	Mak kheua mujer
53	30064931	255120	COL/LAOS/2015/NIVTS/053	16-Nov	*Solanum melongena*	Phongsaly	Phongsaly	B. Namsa	21.44.19.24	102.12.24.91	463	farmstore	landrace	Mak kheua jong
54	30064932	255121	COL/LAOS/2015/NIVTS/054	17-Nov	*Solanum melongena*	Phongsaly	Boun Neua	B. Nalae	21.36.53.38	101.54.07.01	930	backyard	landrace	Mak kheua
55	30064933	255122	COL/LAOS/2015/NIVTS/055	17-Nov	*Solanum melongena*	Phongsaly	Boun Neua	B. Nalae	21.36.48.57	101.54.08.05	917	farmland	landrace	Mak kheua
56	30064934	255123	COL/LAOS/2015/NIVTS/056	17-Nov	*Solanum melongena*	Phongsaly	Boun Neua	B. Nalae	21.36.48.57	101.54.08.05	917	farmland	landrace	Mak kheua
57	30064935	255124	COL/LAOS/2015/NIVTS/057	17-Nov	*Solanum melongena*	Phongsaly	Boun Neua	B. Nalae	21.36.50.18	101.54.08.63	922	backyard	landrace	Mak kheua yao kieng
58	30064936	255125	COL/LAOS/2015/NIVTS/058	17-Nov	*Solanum melongena*	Phongsaly	Boun Neua	B. Nalae	21.36.50.18	101.54.08.63	922	backyard	landrace	Mak kheua poy
59	30064937	255126	COL/LAOS/2015/NIVTS/059	17-Nov	*Solanum melongena*	Phongsaly	Boun Neua	B. Nalae	21.36.52.32	101.54.08.94	918	backyard	landrace	Mak kheua
60	30064938	255127	COL/LAOS/2015/NIVTS/060	17-Nov	*Solanum melongena*	Phongsaly	Boun Neua	B. Nalae	21.36.52.32	101.54.08.99	918	backyard	landrace	Mak kheua hirn
61	30064939	255128	COL/LAOS/2015/NIVTS/061	17-Nov	*Solanum melongena*	Phongsaly	Boun Neua	B. Bounpheaung	21.38.12.71	101.55.06.57	990	backyard	landrace	Mak kheua
62	30064940	255129	COL/LAOS/2015/NIVTS/062	17-Nov	*Solanum torvum*	Phongsaly	Boun Neua	B. Bounpheaung	21.38.17.45	101.55.01.60	984	backyard	landrace	Mak keng

Table 3 (Continued).

Coll No.	Passport No.	JP No.	JP Name	Date	Genus and species	Province/ State	District	Village	North latitude	East longitude	Elevation (m)	Source (Market name)	Status	Local name
63	30064941	255130	COL/LAOS/2015/NIVTS/063	17-Nov	*Solanum melongena*	Phongsaly	Boun Neua	B. Bounpheaung	21.38.16.86	101.55.03.35	983	backyard	landrace	Mak kheua phoy
64	30064942	255131	COL/LAOS/2015/NIVTS/064	17-Nov	*Solanum melongena*	Phongsaly	Boun Neua	B. Bounpheaung	21.38.16.86	101.55.03.35	983	backyard	landrace	Mak kheua tor
65	30064943	255132	COL/LAOS/2015/NIVTS/065	17-Nov	*Solanum melongena*	Phongsaly	Boun Neua	B. Bounpheaung	21.38.16.55	101.55.04.40	986	backyard	landrace	Mak kheua yao
66	30064944	255133	COL/LAOS/2015/NIVTS/066	17-Nov	*Solanum melongena*	Phongsaly	Boun Neua	B. Phiengdokkham	21.37.37.03	101.54.06.54	986	backyard	landrace	Mak kheua ham
67	30064945	255134	COL/LAOS/2015/NIVTS/067	17-Nov	*Solanum melongena*	Phongsaly	Boun Neua	B. Phiengdokkham	21.37.37.03	101.54.06.54	929	backyard	landrace	Mak kheua kirn
68	30064946	255135	COL/LAOS/2015/NIVTS/068	17-Nov	*Solanum* sp.	Phongsaly	Boun Neua	B. Phiengdokkham	21.37.37.03	101.54.06.54	929	backyard	landrace	Mak keng
69	30064947	255136	COL/LAOS/2015/NIVTS/069	17-Nov	*Solanum macrocarpon*	Phongsaly	Boun Neua	B. Phiengdokkham	21.37.37.03	101.54.06.54	929	backyard	landrace	Mak kheua kham
70	30064948	255137	COL/LAOS/2015/NIVTS/070	17-Nov	*Solanum melongena*	Phongsaly	Boun Neua	B. Phiengdokkham	21.37.37.03	101.54.06.54	929	backyard	landrace	Mak kheua phoy
71	30064949	255138	COL/LAOS/2015/NIVTS/071	17-Nov	*Solanum melongena*	Phongsaly	Boun Neua	B. Phiengdokkham	21.37.37.00	101.54.04.90	929	backyard	landrace	Mak kheua
72	30064950	255139	COL/LAOS/2015/NIVTS/072	17-Nov	*Solanum melongena*	Phongsaly	Boun Neua	B. Phiengdokkham	21.37.26.45	101.53.56.60	944	backyard	landrace	Mak kheua
73	30064951	255140	COL/LAOS/2015/NIVTS/073	18-Nov	*Solanum melongena*	Phongsaly	Boun Tai	B. Phothong	21.23.17.58	101.58.19.93	580	backyard	landrace	Mak kheua
74	30064952	255141	COL/LAOS/2015/NIVTS/074	18-Nov	*Solanum melongena*	Phongsaly	Boun Tai	B. Phothong	21.23.17.96	101.58.21.11	576	backyard	landrace	Mak kheua kop
75	30064953	255142	COL/LAOS/2015/NIVTS/075	18-Nov	*Solanum aethiopicum*	Phongsaly	Boun Tai	B. Phothong	21.23.18.13	101.58.22.18	587	backyard	landrace	Mak kheua khom
76	30064954	255143	COL/LAOS/2015/NIVTS/076	18-Nov	*Solanum melongena*	Phongsaly	Boun Tai	B. Phothong	21.23.18.13	101.58.22.18	587	backyard	landrace	Mak kheua pang
77	30064955	255144	COL/LAOS/2015/NIVTS/077	18-Nov	*Solanum melongena*	Phongsaly	Boun Tai	B. Phothong	21.23.18.13	101.58.22.18	587	backyard	landrace	Mak kheua hirn
78	30064956	255145	COL/LAOS/2015/NIVTS/078	18-Nov	*Solanum macrocarpon*	Phongsaly	Boun Tai	B. Phothong	21.23.17.08	101.58.22.11	584	backyard	landrace	Mak kheua khom
79	30064957	255146	COL/LAOS/2015/NIVTS/079	18-Nov	*Solanum aethiopicum*	Phongsaly	Boun Tai	B. Phothong	21.23.17.08	101.58.22.11	584	backyard	landrace	Mak kheua khom
80	30064958	255147	COL/LAOS/2015/NIVTS/080	18-Nov	*Solanum melongena*	Phongsaly	Boun Tai	B. Phothong	21.23.16.57	101.58.22.49	582	backyard	landrace	Mak kheua yao
81	30064959	255148	COL/LAOS/2015/NIVTS/081	18-Nov	*Solanum melongena*	Phongsaly	Boun Tai	B. Phothong	21.23.17.16	101.58.24.15	582	backyard	landrace	Mak kheua pan
82	30064960	255149	COL/LAOS/2015/NIVTS/082	18-Nov	*Solanum melongena*	Phongsaly	Boun Tai	B. Phothong	21.23.12.35	101.58.26.29	586	backyard	landrace	Mak kheua
83	30064961	255150	COL/LAOS/2015/NIVTS/083	18-Nov	*Solanum torvum*	Phongsaly	Boun Tai	B. Phothong	21.23.12.35	101.58.26.29	586	backyard	landrace	Mak keng
84	30064962	255151	COL/LAOS/2015/NIVTS/084	18-Nov	*Solanum melongena*	Phongsaly	Boun Tai	B. Nonbounkang	21.22.58.88	101.59.12.46	592	backyard	landrace	Mak kheua kop yai

Table 3 (Continued).

Coll. No.	Passport No.	JP No.	JP Name	Date	Genus and species	Province/ State	District	Village	North latitude	East longi-tude	Elevation (m)	Source (Market name)	Status	Local name
85	30064963	255152	COL/LAOS/2015/NIVTS/085	18-Nov	*Solanum melongena*	Phongsaly	Boun Tai	B. Nonbounkang	21.22.58.88	101.59.12.46	592	backyard	landrace	Mak kheua
86	30064964	255153	COL/LAOS/2015/NIVTS/086	18-Nov	*Solanum melongena*	Phongsaly	Boun Tai	B. Nonbounkang	21.23.00.39	101.59.17.42	604	farmland	landrace	Mak kheua
87	30064965	255154	COL/LAOS/2015/NIVTS/087	18-Nov	*Solanum* sp.	Phongsaly	Boun Tai	B. Nonbounkang	21.23.00.39	101.59.17.42	604	farmland	landrace	Mak keng
88	30064966	255155	COL/LAOS/2015/NIVTS/088	18-Nov	*Solanum aethiopicum*	Phongsaly	Boun Tai	B. Nonbounkang	21.23.00.39	101.59.17.42	604	farmland	landrace	Mak kheua khom
89	30064967	255156	COL/LAOS/2015/NIVTS/089	18-Nov	*Solanum melongena*	Phongsaly	Boun Tai	B. Nonbounkang	21.23.00.39	101.59.17.42	604	farmland	landrace	Mak kheua kao
90	30064968	255157	COL/LAOS/2015/NIVTS/090	18-Nov	*Solanum melongena*	Phongsaly	Boun Tai	B. Phothong	21.23.19.70	101.58.28.13	576	backyard	landrace	Mak kheua
91	30064969	255158	COL/LAOS/2015/NIVTS/091	18-Nov	*Solanum melongena*	Phongsaly	Boun Tai	B. Bountai	21.24.08.85	101.58.11.77	577	farmland	landrace	Mak kheua yao
92	30064970	255159	COL/LAOS/2015/NIVTS/092	18-Nov	*Solanum melongena*	Phongsaly	Boun Tai	B. Bounyan	21.24.08.85	101.57.54.57	566	backyard	landrace	Mak kheua
93	30064971	255160	COL/LAOS/2015/NIVTS/093	18-Nov	*Solanum melongena*	Phongsaly	Boun Tai	B. Bounyan	21.24.14.76	101.57.54.57	566	backyard	landrace	Mak kheua yao
94	30064972	255161	COL/LAOS/2015/NIVTS/094	18-Nov	*Solanum melongena*	Phongsaly	Boun Tai	B. Bounyan	21.24.14.40	101.57.54.63	569	backyard	landrace	Mak kheua
95	30064973	255162	COL/LAOS/2015/NIVTS/095	18-Nov	*Solanum torvum*	Phongsaly	Boun Tai	B. Bounyan	21.24.13.70	101.57.55.49	567	backyard	landrace	Mak keng
96	30064974	255163	COL/LAOS/2015/NIVTS/096	18-Nov	*Solanum melongena*	Phongsaly	Boun Tai	B. Bounyan	21.24.18.59	101.57.52.46	567	backyard	landrace	Mak kheua
97	30064975	255164	COL/LAOS/2015/NIVTS/097	18-Nov	*Solanum sanitwongsei*	Phongsaly	Boun Tai	B. Bounyan	21.24.20.99	101.57.50.47	570	backyard	landrace	Mak keng khom
98	30064976	255165	COL/LAOS/2015/NIVTS/098	18-Nov	*Solanum melongena*	Phongsaly	Boun Tai	B. Bounyan	21.24.22.64	101.57.51.16	567	backyard	landrace	Mak kheua
99	30064977	255166	COL/LAOS/2015/NIVTS/099	18-Nov	*Solanum aethiopicum*	Phongsaly	Boun Tai	B. Bounyan	21.24.22.64	101.57.51.16	567	backyard	landrace	Mak kheua khom
100	30064978	255167	COL/LAOS/2015/NIVTS/100	18-Nov	*Solanum melongena*	Phongsaly	Boun Tai	B. Bounyan	21.24.23.41	101.57.46.93	570	backyard	landrace	Mak kheua yao
101	30064979	255168	COL/LAOS/2015/NIVTS/101	19-Nov	*Solanum viarum*	Phongsaly	Boun Tai	B. Sanomai	21.20.48.17	102.02.48.15	962	wild	weedy	Mak kheua ba
102	30064980	255169	COL/LAOS/2015/NIVTS/102	19-Nov	*Solanum* sp.	Phongsaly	Khua	B. Sopkai	21.02.54.70	102.26.23.82	398	backyard	landrace	Mak kheua
103	30064981	255170	COL/LAOS/2015/NIVTS/103	19-Nov	*Solanum melongena*	Phongsaly	Khua	B. Sopkai	21.02.54.70	102.26.23.82	398	backyard	landrace	Mak kheua
104	30064982	255171	COL/LAOS/2015/NIVTS/104	19-Nov	*Solanum melongena*	Phongsaly	Khua	B. Sopkai	21.02.54.70	102.26.23.82	398	backyard	landrace	Mak kheua
105	30064983	255172	COL/LAOS/2015/NIVTS/105	19-Nov	*Solanum melongena*	Phongsaly	Khua	B. Sopkai	21.02.49.29	102.26.36.84	401	backyard	landrace	Mak kheua kao

Table 3 (Continued).

Coll. No.	Passport No.	JP No.	JP Name	Date	Genus and species	Province/ State	District	Village	North latitude	East longitude	Elevation (m)	Source (Market name)	Status	Local name
106	30064984	255173	COL/LAOS/2015/NIVTS/106	19-Nov	*Solanum aethiopicum*	Phongsaly	Khua	B. Sopkai	21.02.49.29	102.26.36.84	401	backyard	landrace	Mak kheua khom
107	30064985	255174	COL/LAOS/2015/NIVTS/107	19-Nov	*Solanum melongena*	Phongsaly	Khua	B. Sopkai	21.02.48.56	102.26.39.92	390	backyard	landrace	Mak kheua
108	30064986	255175	COL/LAOS/2015/NIVTS/108	19-Nov	*Solanum melongena*	Phongsaly	Khua	B. Tabuk	21.04.52.99	102.30.33.60	384	backyard	landrace	Mak kheua
109	30064987	255176	COL/LAOS/2015/NIVTS/109	19-Nov	*Solanum melongena*	Phongsaly	Khua	B. Tabuk	21.04.52.99	102.30.33.60	384	backyard	landrace	Mak kheua
110	30064988	255177	COL/LAOS/2015/NIVTS/110	19-Nov	*Solanum melongena*	Phongsaly	Khua	B. Tabuk	21.04.52.99	102.30.33.60	384	backyard	landrace	Mak kheua
111	30064989	255178	COL/LAOS/2015/NIVTS/111	19-Nov	*Solanum melongena*	Phongsaly	Khua	B. Tabuk	21.04.53.89	102.30.32.30	380	backyard	landrace	Mak kheua van
112	30064990	255179	COL/LAOS/2015/NIVTS/112	19-Nov	*Solanum* sp.	Phongsaly	Khua	B. Tabuk	21.04.53.84	102.30.32.44	390	backyard	landrace	Pak dith
113	30064991	255180	COL/LAOS/2015/NIVTS/113	19-Nov	*Solanum melongena*	Phongsaly	Khua	B. Tabuk	21.04.53.84	102.30.32.44	390	backyard	landrace	Mak kheua kao
114	30064992	255181	COL/LAOS/2015/NIVTS/114	19-Nov	*Solanum melongena*	Phongsaly	Khua	B. Hatdean	21.04.21.27	102.29.58.64	392	backyard	landrace	Mak kheua poy
115	30064993	255182	COL/LAOS/2015/NIVTS/115	19-Nov	*Solanum melongena*	Phongsaly	Khua	B. Hatdean	21.04.21.27	102.29.58.64	392	backyard	landrace	Mak kheua poy
116	30064994	255183	COL/LAOS/2015/NIVTS/116	19-Nov	*Solanum melongena*	Phongsaly	Khua	B. Hatdean	21.04.21.27	102.29.58.64	392	backyard	landrace	Mak kheua
117	30064995	255184	COL/LAOS/2015/NIVTS/117	19-Nov	*Solanum melongena*	Phongsaly	Khua	B. Hatdean	21.04.20.30	102.29.53.21	385	backyard	landrace	Mak kheua
118	30064996	255185	COL/LAOS/2015/NIVTS/118	19-Nov	*Solanum melongena*	Phongsaly	Khua	B. Hatdean	21.04.20.30	102.29.53.21	385	backyard	landrace	Mak kheua
119	30064997	255186	COL/LAOS/2015/NIVTS/119	19-Nov	*Solanum melongena*	Phongsaly	Khua	B. Hatdean	21.04.20.05	102.29.51.34	388	backyard	landrace	Mak kheua
120	30064998	255187	COL/LAOS/2015/NIVTS/120	19-Nov	*Solanum melongena*	Phongsaly	Khua	B. Hatdean	21.04.19.47	102.29.50.74	387	backyard	landrace	Mak kheua
121	30064999	255188	COL/LAOS/2015/NIVTS/121	19-Nov	*Solanum melongena*	Phongsaly	Khua	B. Hatdean	21.04.19.03	102.29.46.00	388	backyard	landrace	Mak kheua
122	30065000	255189	COL/LAOS/2015/NIVTS/122	19-Nov	*Solanum melongena*	Phongsaly	Khua	DAFO of Khua dist.	21.04.55.79	102.30.14.88	388	backyard	landrace	Mak kheua
123	30065001	255190	COL/LAOS/2015/NIVTS/123	19-Nov	*Solanum melongena*	Phongsaly	Khua	DAFO of Khua dist.	21.04.55.79	102.30.14.88	388	backyard	landrace	Mak kheua
124	30065002	255191	COL/LAOS/2015/NIVTS/124	19-Nov	*Solanum melongena*	Phongsaly	Khua	DAFO of Khua dist.	21.04.55.79	102.30.14.88	388	backyard	landrace	Mak kheua
125	30065003	255192	COL/LAOS/2015/NIVTS/125	19-Nov	*Solanum melongena*	Phongsaly	Khua	DAFO of Khua dist.	21.04.55.79	102.30.14.88	388	backyard	landrace	Mak kheua

Table 4. Several characteristics of accessions collected during the 2015 survey in northern Laos

Collection No.	Harvested fruit				Color of flower	Spiny or spineless	Remarks
	Skin color	Length (mm)	Length/ Diameter	Shape			
1	Green	43	1	Round	-	-	
2	Green	60	1	Egg-shaped	-	-	
3	Green	39	1	Round	-	Spineless	
4	Green	10	1	Round	-	-	*Solanum* sp.
5	White	39	1	Round	-	Spiny	
6	Green	36	1	Round	-	Spiny	
7	Green	32	1	Round	-	Spineless	Long peduncle
8	Green	47	1	Round	-	Spiny	
9	Green	34	1	Round	-	Spineless	
10	Green	39	1	Round	-	Spiny	
11	Green	49	1	Round	-	Spineless	
12	Pale green	52	1	Round	-	Spiny	
13	Green	34	1	Round	-	Strong spine	
14	Green	47	1	Round	-	Strong spine	
15	Pale green	44	1	Round	White	Spineless	
16	Pale green	141	4	Long	Purple	Spineless	
17	White	29	1	Round	-	-	
18	Green	92	2	Oblong	Purple	Spineless	
19	Green	29	1	Egg-shaped	Purple	Spineless	Small leaves
20	White	40	1	Flattened		Spineless	
21	Green	39	1	Flattened	Purple	Spineless	
22	Green	44	1	Flattened	Purple	Spiny	
23	White purple	21	1	Egg-shaped	-	-	
24	Green purple	37	1	Flattened	Purple	Spiny	
25	Green	233	7	Long	-	-	
26	White green	42	1	Flattened	-	Spineless	
27	Green	53	1	Flattened	-	Spineless	
28	Pale green	48	1	Flattened	-	-	*S. macrocarpon*
29	Purple	107	1	Oblong	-	-	
30	Pale purple	72	2	Egg-shaped	-	Spineless	
31	Pale green	75	2	Egg-shaped	-	Spineless	
32	Green purple	37	1	Flattened	-	Spineless	
33	Green	12	1	Round	White	-	*S. torvum*
34	Green purple	155	4	Long	-	Spineless	
35	-	-	-	-	-	-	No seeds
36	-	45	1	Flattened	-	-	*S. aethiopicum*
37	Black purple	108	4	Long		Spiny	Smoked fruit
38	Green	149	6	Long		Spiny	Smoked fruit
39	Green	262	4	Long	White	Spiny	
40	Purple	63	1	Flattened	-	-	*S. macrocarpon*
41	Purple	30	1	Flattened	-	-	*S. aethiopicum*
42	Pale green	12	1	Round	White	-	*S. torvum*
43	Green	41	1	Round	Purple	Strong spine	
44	Green purple	43	1	Round	Purple	Weak spine	
45	Green	45	1	Round	Purple	Weak spine	
46	Green	31	1	Flattened	Purple	Spineless	
47	Pale purple	34	1	Round	-	Weak spine	
48	Green	155	4	Long	-	-	Smoked fruit
49	Green	35	1	Round	Purple	Strong spine	
50	Green	54	1	Flattened	-	Spiny	
51	White purple	41	1	Flattened	-	Spineless	
52	Green	600	9	Long	-	Spineless	Smoked fruit, 60 cm long
53	Green	200	4	Long	-	Spineless	Smoked fruit, 20 cm long
54	Green	37	1	Round	Purple	Spiny	
55	Green purple	38	1	Round	Purple	Spiny	
56	White	36	1	Round	Purple	Weak spine	
57	Green	-	-	Long	-	-	Dropped fruit
58	Green	32	1	Egg-shaped	Pale purple	Spineless	
59	Green	44	1	Round	Purple	Weak spine	
60	Green	32	1	Round	Purple	Strong spine	
61	Green	45	1	Round	Purple	Spiny	
62	Green	12	1	Round	-	-	*S. torvum*

Table 4 (Continued).

Collection No.	Harvested fruit				Color of flower	Spiny or spineless	Remarks
	Skin color	Length (mm)	Length/ Diameter	Shape			
63	Pale purple	43	1	Flattened	-	Spineless	
64	-	39	1	Round	-	Spineless	Only mature fruits
65	Green	143	3	Long	-	Spineless	
66	Green	44	1	Round	Purple	Strong spine	
67	Green	29	1	Round	Purple	Spineless	
68	Green	9	1	Round	Pale purple	-	*S. sanitwongsei* ?
69	-	89	1	Flattened	-	-	*S. macrocarpon*
70	Green	68	1	Egg-shaped	Purple	Spiny	Plant of 2 years old
71	Green purple	43	1	Egg-shaped	Purple	Spiny	
72	Green	35	1	Round	Purple	Spineless	
73	Green	36	1	Round	Purple	Spiny	
74	Green purple	34	1	Round	Purple	Spineless	
75	-	39	1	Egg-shaped	-	-	*S. aethiopicum*
76	Green purple	31	1	Flattened	Purple	Spineless	
77	Dark green	30	1	Round	Purple	Strong spine	
78	White	69	1	Flattened	-	-	*S. macrocarpon*
79	White purple	30	1	Flattened	Pale purple	-	*S. aethiopicum*
80	Green purple	300	8	Long	Pale purple	Spiny	
81	White purple	31	1	Round	Purple	Spiny	Plant of 4 years old
82	Green purple	46	1	Flattened	Purple	Spiny	
83	Green	12	1	Round	-	-	*S. torvum*
84	Green	53	1	Round	Purple	Spiny	
85	Green	36	1	Flattened	Purple	Spiny	
86	Green	60	1	Round	Purple	Spiny	
87	Green	8	1	Round	-	-	*S. sanitwongsei* ?
88	Green	37	1	Flattened	-	-	*S. aethiopicum*
89	White	45	2	Egg-shaped	White	Spineless	
90	White purple	37	1	Flattened	Purple	Spineless	
91	Green	96	2	Oblong	Purple	Spiny	
92	Green	36	1	Flattened	Purple	Spiny	
93	Green	82	2	Egg-shaped	Purple	Spineless	
94	Green	46	1	Flattened	Purple	Spiny	
95	Green	16	1	Round	White	-	*S. torvum*
96	White purple	35	1	Flattened	Purple	Spineless	
97	Green	10	1	Round	-	-	*S. sanitwongsei*
98	Green	49	1	Round	Purple	Spiny	
99	Green	49	1	Egg-shaped	Pale purple	-	*S. aethiopicum*
100	Pale green	169	6	Long	Purple	Spineless	
101	Pale green	23	1	Round	-	-	*S. viarum*
102	Pale green	11	1	Round	-	-	*Solanum.* sp
103	Green	74	1	Flattened	-	Spineless	
104	Green	34	1	Round	Purple	Strong spine	
105	White	68	1	Round	Purple	Spiny	
106	Pale green	30	1	Flattened	-	-	*S. aethiopicum*
107	Green purple	35	1	Round	Purple	Spineless	
108	White purple	48	1	Flattened	Purple	Spiny	
109	Green	37	1	Flattened	Purple	Spiny	
110	Green	54	1	Egg-shaped	Purple	-	
111	White green	70	1	Round	Purple	Spineless	Plant of 2 years old
112	Green	11	1	Round	-	-	*Solanum* sp. Edible leaves & fruits
113	White	43	1	Flattened	Purple	Spiny	
114	White purple	29	1	Round	Purple	Spiny	
115	White purple	33	1	Flattened	-	Spineless	
116	Green purple	40	1	Round	-	Spineless	
117	Green purple	38	1	Round	-	Spineless	
118	White purple	52	1	Flattened	Purple	Spiny	
119	Green purple	39	1	Flattened	Purple	Spiny	
120	-	73	3	Long	-	-	Dropped and lotten
121	Green	54	1	Egg-shaped	Purple	Spineless	
122	-	92	1	Round	-	Spiny	
123	Green	44	1	Round	-	Spineless	
124	White purple	46	1	Flattened	-	Spineless	
125	White purple	48	1	Flattened	-	Spineless	

Fig. 1. Main sites visited during the 2015 survey in northern Laos (black circles).

A free map provided by the GMS Sustainable Tourism Development Project in Lao PDR was used.

Photo 1. Sea of clouds in highly mountainous region near Phongsaly

Photo 2. Transport and guesthouse in Boun Neua district

Photo 3. Discussion with the director of the Horticultural Research Center (HRC)

Photo 4. Discussion with staff of the Province Agriculture and Forestry Office (PAFO) of Oudomxai

Photo 5. Commercial eggplants grown from seeds imported from China in a market in Ban Thin village

Photo 6. Many commercial vegetable seeds imported from China in a market in Ban Thin village

Photo 7. Survey of eggplants growing in a backyard in Ban Lak 4 village

Photo 8. Fruits of an uncharacterized *Solanum* sp. collected in Ban Lak 4 village (No. 4)

Photo 9. Survey of eggplants at the side of the road in Ban Lak 4 village

Photo 10. Fruits of eggplants collected in Ban Lak 4 village (Nos. 6 to 8)

Photo 11. Selected fruit marked by a farmer for extraction of seeds in Ban Lak 4 village

Photo 12. Recording of survey information and interviewing local people in Ban Yan village

Photo 13. Large Chinese-owned plantations of watermelon and banana on the way to Houn district

Photo 14. Survey of eggplants in a field in Ban Nakhong village

Photo 15. Fruit of eggplant collected in Ban Nakhong village (No. 25)

Photo 16. Regional cuisine on the way to Phongsaly: fruits of *S. torvum*, a rat, a frog, caterpillar larvae, and a river plant

Photo 17. Survey of eggplants in an upland rice field in Ban Nong Bouadeng village

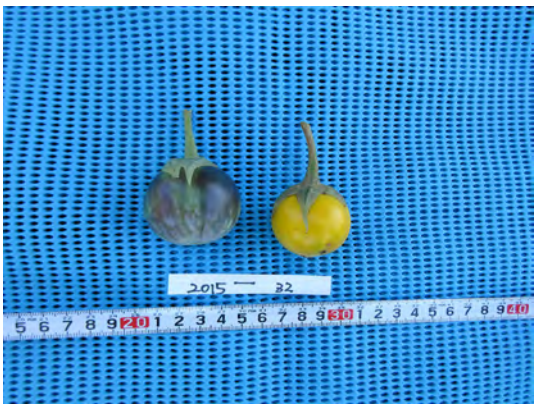

Photo 18. Fruits of eggplant collected in Ban Nong Bouadeng village (No. 32)

Photo 19. Immature fruits of *S. aethiopicum* collected in a farmers' market on the way to Phongsaly (No. 35)

Photo 20. Survey of eggplants in a farmers' market on the way to Phongsaly

Photo 21. Various vegetables, including eggplants, in a market in Phongsaly

Photo 22. Discussion with staff of the PAFO of Phongsaly

Photo 23. Survey of eggplants in a sloping backyard in Ban Pangsan village

Photo 24. Eggplants smoked for preservation of seeds in Ban Pangsan village (No. 38)

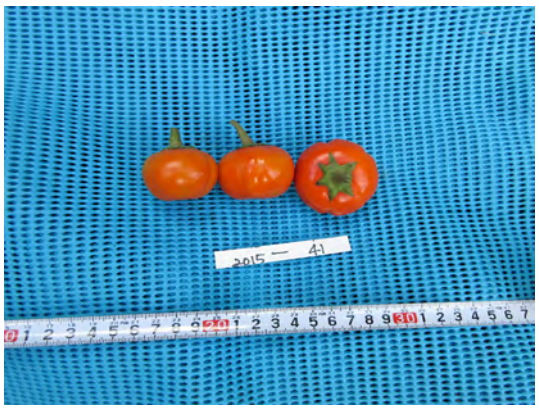

Photo 25. Fruits of *S. aethiopicum* collected in Ban Pangsan village (No. 41)

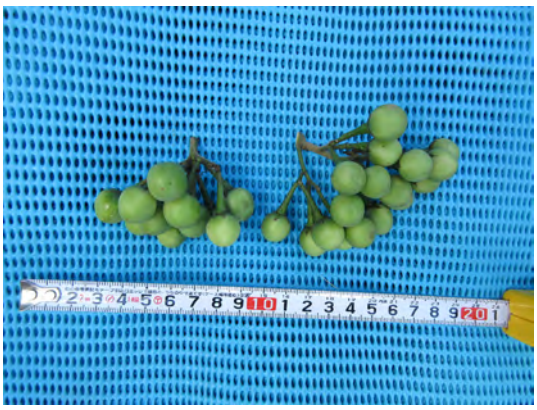

Photo 26. Fruits of *S. torvum* collected in Ban Pangsan village (No. 42)

Photo 27. Interviewing local people about eggplant in Ban Vang Xai village

Photo 28. Survey of eggplants in a mountainous area in Ban Namsa village

Photo 29. Discussion with staff of the District Agriculture and Forestry Office (DAFO) of Boun Neua district

Photo 30. Dropped eggplant fruit collected in Ban Nalae village (No. 57)

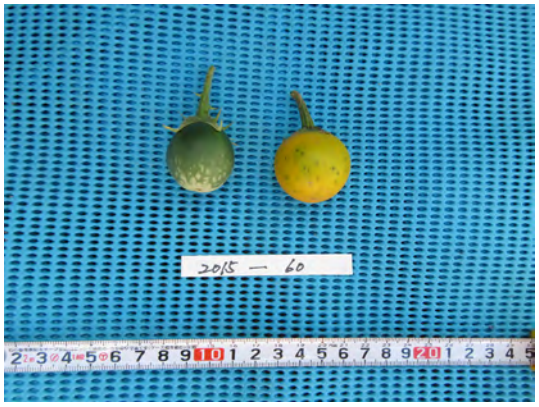

Photo 31. Fruits of eggplant typical of northern Laos, collected in Ban Nalae village (No. 60)

Photo 32. Fruit of eggplant collected in Ban Bounpheaung village (No. 65)

Photo 33. Discussion about the survey with staff of the DAFO of Boun Tai district

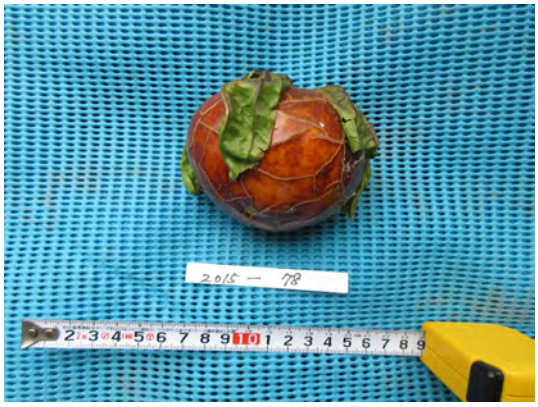

Photo 34. Fruit of *S. macrocarpon* collected in Ban Phothong village (No. 78)

Photo 35. Rotten eggplant collected in Ban Phothong village (No. 80)

Photo 36. Four-year-old eggplant bush in Ban Phothong village (No. 81)

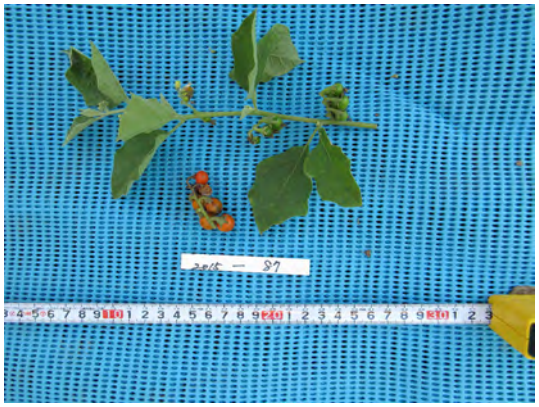

Photo 37. Fruit of an uncharacterized Solanum sp. probably *S. sanitwongsei* collected in Ban Nonbounkang village (No. 87)

Photo 38. Fruits of eggplant collected in Ban Bounyan village (No. 93)

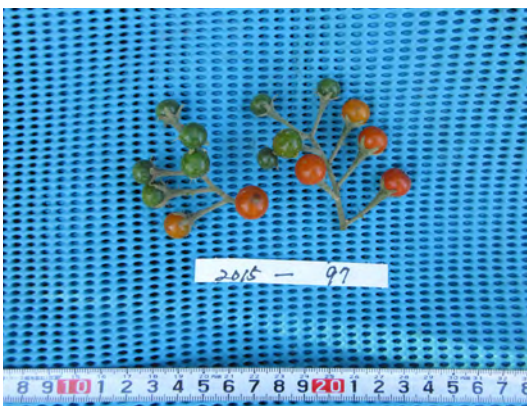

Photo 39. Fruits of what is probably *S. sanitwongsei* collected in Ban Bounyan village (No. 97)

Photo 40. Fruits of eggplant collected in Ban Bounyan village (No. 100)

Photo 41. Fruits of probably *S. viarum* collected in Ban Sanomai village (No. 101)

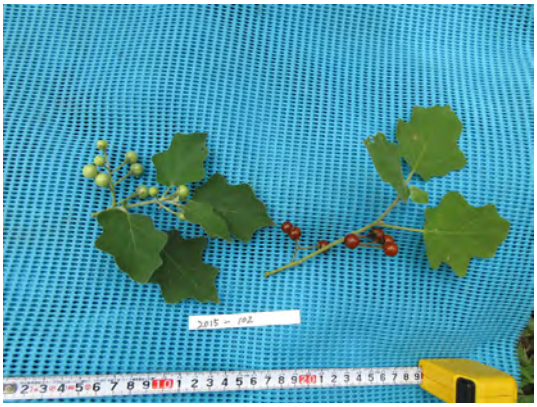

Photo 42. Fruits of an uncharacterized *Solanum* sp. collected in Ban Sopkai village (No. 102)

Photo 43. Fruits of eggplant collected in Ban Sopkai village (No. 105)

Photo 44. Discussion with staff of the DAFO of Khua district

Photo 45. An uncharacterized *Solanum* sp. collected in Ban Tabuk village (No. 112)

Photo 46. Regional dish cooked with the skin of mature eggplant in a market in Boun Tai district

Photo 47. Organic cultivation of leafy vegetables in Ban Lak 4 village

Photo 48. Raw vegetables commonly eaten