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Original Paper

Collaborative Exploration of the Solanaceae and Cucurbitaceae Vegetable Genetic Resources in Cambodia, 2014

Hiroshi MATSUNAGA [1)], Kenichi MATSUSHIMA [2)], Katsunori TANAKA [3)], Sim THEAVY [4)], Seang LAY HENG [4)], Ty CHANNA [4)], Yu TAKAHASHI [5), 6)] and Norihiko TOMOOKA [5)]

1) *National Agriculture and Food Research Organization*, *National Institute of Vegetable and Tea Science*, Kusawa 360, Ano, Tsu, Mie 514-2392, Japan

2) *Shinshu University*, 8304, Minamiminowa, Nagano 399-4598, Japan

3) *Hirosaki University*, 1, Bunkyo, Hirosaki, Aomori 036-8560, Japan

4) *Cambodian Agricultural Research and Development Institute*, National Road 3, Prateah Lang, Dangkor, Phnom Penh, Cambodia

5) *Genetic Resources Center*, *National Institute of Agrobiological Sciences*, Kannondai 2-1-2, Tsukuba, Ibaraki 305-8602, Japan

6) *Research Fellow of the Japan Society for the Promotion of Science*

Corresponding author : H. MATSUNAGA (e-mail : pep@affrc.go.jp)

Summary

The National Institute of Agrobiological Sciences (NIAS), Japan, and the Cambodian Agricultural Research and Development Institute (CARDI), Cambodia, established a Joint Research Agreement (JRA) on Characterization and Evaluation of Plant Genetic Resources for Food and Agriculture in July 2014. The first collaborative mission to explore and collect vegetable genetic resources in Cambodia was conducted from 9 to 22 November 2014. The main objectives were to collect accessions of chili pepper and melon, in addition to eggplants and other Cucurbitaceae crops. During this mission, we surveyed Phnom Penh, Kampong Chnang, Pursat, Battambang, Pailin, Banteay Meanchey and Oddar Meanchey provinces of western and northwestern Cambodia. A total of 124 samples were collected: 49 of *Capsicum* spp., 12 of *Solanum* spp., 41 of *Cucumis melo*, 13 of *Cucurbita moschata*, 6 of *Benincasa hispida* and 3 of other Cucurbitaceae. However, 1 sample of *C. moschata* and 3 samples of *B. hispida* did not have any matured seeds, so they were deleted from the collection list. The seeds of the remaining 120 samples were shared equally: half of each sample was transferred to the CARDI Genebank, and the other half was transferred to the NIAS Genebank.

KEY WORDS: Cambodia, *Capsicum*, Melon, Eggplant, Pumpkin, Cucurbitaceae crop

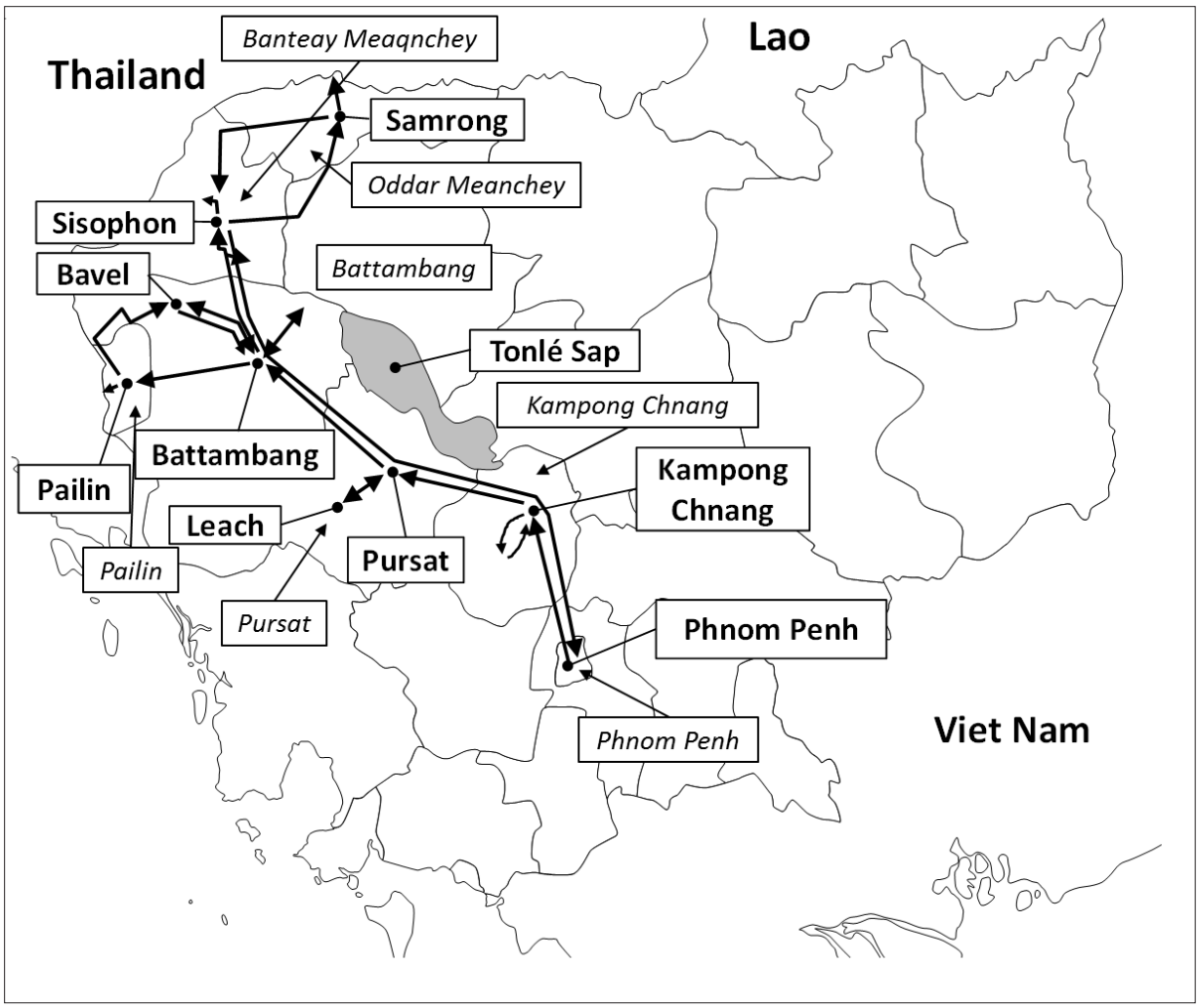

Fig. 1. Exploration route and main collection sites for the 2014 survey in western and northwestern Cambodia.

Introduction

The National Institute of Agrobiological Sciences (NIAS) in Japan and the Cambodian Agricultural Research and Development Institute (CARDI) in Cambodia established a Joint Research Agreement (JRA) on Characterization and Evaluation of Plant Genetic Resources for Food and Agriculture in July 2014. This is a report of the first collaborative field survey on vegetable plant genetic resources in Cambodia conducted under this collaboration project.

In Southeast Asia, a range of *Capsicum*, eggplant and Cucurbitaceae landraces are grown (Matsunaga *et al*., 2010b; Yamamoto and Nawata, 2005; Yoshida *et al*., 1997), so these accessions contained a wide range of morphological diversity (Saito *et al*., 2006). Therefore, we expected to find a wide range of genetic diversity in them. This diversity is important because of the severity of certain diseases that affect these crops around the world (Matsunaga *et al*. 2011, Dhillon *et al*. 2012). However, few *Capsicum* pepper, eggplant and Cucurbitaceae genetic resources from Cambodia are available worldwide. Therefore, we collected these crops and information on their cultivation and usage in the present survey.

Methods

We traveled by car (provided by CARDI) to look for new accessions in Phnom Penh, Kampong Chnang, Pursat, Battambang, Pailin, Banteay Meanchey and Oddar Meanchey provinces of western and

Table 1. Itinerary followed during the 2014 survey in western and northwestern Cambodia.

Date	Day	Itinerary	Stay
9-Nov	Sun	Narita 11:45 (TG643) -- 16:45 Bangkok; 18:25 (TG584) -- 19:40 Phnom Penh Chubu 11:00 (TG645) -- 15:40 Bangkok; 18:25 (TG584) -- 19:40 Phnom Penh	Phnom Penh
10-Nov	Mon	Visit Cambodian Agricultural Research and Development Institute (CARDI) and discuss the survey. Visit markets in Phnom Penh.	Phnom Penh
11-Nov	Tue	Phnom Penh -- Kampong Chnang	Kampong Chnang
12-Nov	Wed	Kampong Chnang -- Pursat -- Leach -- Pursat	Pursat
13-Nov	Thu	Pursat -- Battambang -- Bavel -- Battambang	Battambang
14-Nov	Fri	Battambang -- Chheb -- Pailin	Pailin
15-Nov	Sat	Pailin -- EK Phnom -- Battambang	Battambang
16-Nov	Sun	Battambang -- Sisophon -- Pong Ro -- Sisophon	Sisophon
17-Nov	Mon	Sisophon -- Samrong -- Kok Chhes -- Samrong	Samrong
18-Nov	Tue	Samrong -- Kokmoon -- Sisophon	Sisophon
19-Nov	Wed	Sisophon -- Phnom Penh	Phnom Penh
20-Nov	Thu	Visit CARDI and arrange the collected seeds.	Phnom Penh
21-Nov	Fri	Phnom Penh 20:40 (TG585) -- 21:45 Bangkok	On flight
22-Nov	Sat	Bangkok 23:15 [Fri pm] (TG682) -- 6:55 Narita Bangkok 0:05 (TG644) -- 7:30 Chubu	

northwestern Cambodia from 11 to 19 November 2014 (Table 1, Fig. 1). We visited local markets (Photos 1 and 2) and farmers' fields to obtain samples of mature fruits or seeds of vegetables of interest. The main crops for this exploration were chili pepper and melon; in addition, we collected eggplants and other Cucurbitaceae crops (cucurbits). After confirming the site location using GPS, we gathered samples and interviewed to collect information about the samples such as local name, sowing and harvesting times, usage and cultivated area. In the case of collecting mature fruits, we harvested the seeds from the fruits within 3 days of collection.

Results

Summary of samples collected

We collected a total of 124 seed and fruit samples at 41 survey sites in western and northwestern Cambodia (Tables 2 and 3). The initial collection included 49 samples of *Capsicum* spp. (chili pepper), 12 of *Solanum* spp. (eggplant), 41 of *Cucumis melo* (melon), 13 of *Cucurbita moschata* (pumpkin), 6 of *Benincasa hispida* (wax gourd) and 3 of other Cucurbitaceae. We could not obtain mature seeds from three samples of *B. hispida* (No. 5, 13 and 102) and one sample of *C. moschata* (No. 90) because of their young fruits. Thus the final number of seed collections was 120. We shared the seed collections equally between NIAS and CARDI.

Daily sample collection

The remainder of this section presents the details of our survey.

Table 2. Species collected during the 2014 survey in western and northwestern Cambodia.

Collection site (province)	*Capsicum* spp.	*Solanum* spp.	*Cucumis melo*	*Cucurbita moschata*	*Benincasa hispida*	Other	Total
Kampong Chnang	3	1	0	1	1	0	6
Pursat	6	2	4	1	1	0	14
Battambang	21	6	16	6	2	1	52
Pailin	5	0	9	2	1	0	17
Banteay Meanchey	5	0	3	1	0	2	11
Oddar Meanchey	9	3	9	2	1	0	24
Total	49	12	41	13	6	3	124

11th November: We went to Kampong Chnang from Phnom Penh. We first visited the Agronomy and Agricultural Land Improvement Office in Kampong Chnang, where we collected information about vegetable cultivation in the area and made arrangements for exploration with the office staff. We then visited a central market in Kampong Chnang and collected three chili pepper fruit samples and one pumpkin fruit sample (No. 1 to 4). We traveled to Pong Ro village near Kampong Chnang and collected one wax gourd fruit (No. 5). We also found some eggplant plants with mature fruits growing in the yard of a house and collected one mature fruit from the plants (No. 6). After that, we went to a watermelon field. There were various kinds of fruits, but we did not collect any because they appeared to be a segregating population, likely the F_2 progeny of F_1 cultivars.

12th November: We went to Pursat and first visited the Pursat Provincial Department of Agriculture, where we collected information about vegetables in the area and made arrangements for the exploration with the office staff. We then visited a central market in Pursat and collected two chili pepper fruit samples (No. 7, 8). We traveled to Leach village, located south of Pursat, and collected two fruit samples of chili pepper, two of eggplant, one of pumpkin and one of wax gourd (No. 9 to 13 and 18) in a central market. After that, we harvested one chili pepper fruit sample (No. 14) from the yard of a farmer's house in Bos Pouy village, obtained one melon seed sample (No. 15) from a farmer in Preaek Bei village, and harvested one chili pepper fruit sample (No. 16) from the yard of the same famer's house. Both of these villages were near Leach village. In the evening, we went to see a farmer who cultivated melons in Bak Tra village, located between Leach and Pursat, and collected three melon seed samples (No. 17-1 to 17-3) from him.

13th November: We went to Battambang and first visited the Provincial Department of Agriculture, where we collected information about vegetables in the area and made arrangements for the explortion with the office staff. We then visited a market in Bavel, located northwest of Battambang, and collected two melon seed samples, one eggplant seed sample, and one chili pepper seed sample (No. 19-1 to 21) at a shop in Bavel market, although all of the seed samples were from Thailand. Subsequently, we collected two bags of dry chili peppers (No. 22, 23): No. 22 was harvested in Battambang and No. 23 was harvested in Kandal Province, located south of Phnom Penh. In addition, we collected five chili pepper fruit samples and one pumpkin fruit sample (No. 24 to 29) in the same market. We then surveyed at Saing Raing, Souh Sla and Boeung Por Poul village, all located near Bavel. We collected three melon seed samples (No. 30-1 to 30-3) from a farmer in Saing Raing village. We collected one eggplant fruit sample, one pumpkin seed sample, one Cucurbit seed sample and one wax gourd seed sample (No. 31 to 34) from a farmer in Souh Sla village,

and we collected two melon seed samples and one chili pepper fruit sample (No. 35-1 to 36) from another farmer in the same village. We also collected one pumpkin seed sample, one melon seed sample and one wax gourd seed sample (No. 37 to 39) from a farmer in Boeung Por Poul village and harvested three chili pepper fruit samples (No. 40 to 42) from the farmer's yard.

14th November: We first visited Chhev market, located southwest of Battambang, and we collected four chili pepper fruit samples, two pumpkin seed sample and one eggplant fruit sample (No. 43 to 49). We then drove to Pailin, where we visited Samaki market and collected three chili pepper fruit samples and two pumpkin fruit samples (No. 50 to 54). Because the market was located near Thailand, many imported vegetables were sold there, but we selected samples produced near the market in Cambodia. After that, we visited a farmer who was suggested to us by a village leader, and we collected two melon seed samples (No. 55-1 to 55-2). Subsequently, we went to Roth Kros Ches village near Pailin according to information obtained in Samaki market, and we collected three melon seed samples and one wax gourd fruit sample from a farmer (No. 56-1 to 57). We also visited Tamey village, located north of Pailin, and collected two melon seed samples and two melon fruit samples (No. 58 to 60) from a farmer.

15th November: We visited Salakrav market, located between Pailin and Bavel, and collected two chili pepper fruit samples (No. 61, 62). On the way to Bavel, we were visited a melon farmer who was cultivating melons surrounded by cassava fields in Otaki village, also located between Pailin and Bavel. We collected three melon fruit samples (No. 63 to 65) from his field. After we reached Battambang, we drove toward Tonlé Sap Lake. On the way, we stopped to see a farmer in Sdey village, and we harvested one eggplant fruit sample (No. 66) from his field. In addition, we collected one eggplant fruit sample, two melon seed samples and one chili pepper fruit sample (No. 67 to 69) from another farmer who lived nearby. According to information from that farmer, we visited a melon farmer and collected two melon seed samples (No. 70 to 71) and obtained one eggplant seed sample (No. 72) from another farmer. We then came back to Battambang, where we collected two chili pepper fruit samples and one pumpkin fruit sample (No. 73 to 75) in a market.

16th November: We collected one melon fruit sample (No. 76) displayed in the restaurant where we had breakfast. After that, we went to Mongkol Borei in Banteay Meanchey and stopped at the Provincial Department of Agriculture to meet people who could guide us to some farmers in the area. First we visited the Pong Ro market near Sisophon, and we collected one chili pepper fruit sample, one melon seed sample and one pumpkin seed sample (No. 77 to 79). We drove southward a little and stopped by a farmer's shop where we collected one chili pepper fruit sample (No. 80). In addition, we collected two melon seed samples (No. 81-1 to 81-2) from a farmer living near the previous farmer. We returned to the Pong Ro market and collected two watermelon fruit samples (No. 82, 83). After that, we collected three chili pepper samples (No. 84 to 86) in a market of Svay, near Sisophon.

17th November: We drove to Samrong, which took about two hours. After we arrived, we visited a market where we collected five chili pepper fruit samples and two pumpkin fruit samples (No. 87-1 to 92). We then drove to see a melon farmer living near Samrong, and we harvested one eggplant fruit sample (No. 93) from his yard and obtained three melon seed samples (No. 94-1 to 94-3) from him. We also visited his neighbors and collected two melon seed samples and one chili pepper fruit sample (No. 95-1 to 96) from them. We visited one more farmer who lived near Samrong and collected one eggplant fruit sample and two melon seed samples (No. 97 to 98-2).

18th November: We visited a farmer who lived in the northern part of Samrong and collected two

melon seed samples and one eggplant seed sample (No. 99-1 to 100). After that, we drove to Kok Mon market, which is located between Samrong and Sisophon, where we collected one chili pepper fruit sample and one wax gourd fruit sample (No. 101, 102). On the way to Sisophon, we stopped at a farm and collected one chili pepper fruit sample (No. 103).

19th November: We returned to Phnom Penh from Sisophon.

20th November: We returned to CARDI, where we divided our seed samples for archiving in Cambodia and Japan. At that time, we obtained three chili pepper fruit samples (No. 104 to 106) from Dr. Lay Heng. Dr. Layheng collected one chili pepper fruit sample in Oddar Meanchey on 17th November, and two chili pepper fruit samples in Battambang on 18th November.

Discussion

(a) Solanaceous crops

1) Chili peppers

A total of 49 accessions of chili peppers were collected by this survey in the western and northwestern parts of Cambodia. Of these, 22 accessions were identified as *C. annuum*, another 23 were identified as *C. frutescens* and 4 were identified as *Capsicum* spp. mainly by the morphological character of the fruits.

Fifteen of the 26 accessions identified as *C. annuum* or *Capsicum* spp. were called 'Mates Dai Neang' (Photos 3 and 4) by people in the collection area; these accessions had elongated (fruit length 40-60 mm) and pungent fruit. Seventeen of the 23 accessions identified as *C. frutescens* were called 'Mates Ach Sath' (Photos 4 and 5); these accessions had small (fruit length 20-30 mm) and very pungent fruit. Another variety of *C. annuum*, called 'Mates Plok', (Photo 6) was also collected. Fruits of 'Mates Plok' were frequently observed in markets; however, in most cases, fresh fruits of this variety were imported from Vietnam. "Plok" means "air bladder of fish" in the Khmer language, and immature fruit of the variety has a white color, shape and size similar to the air bladder of a fish. These three varieties are considered to be popular in Cambodia. This information matches that of a past report of investigation in Cambodia (Yamamoto *et al*. 2011), but there was diversity even among chili pepper accessions known by the same variety name. A variety of *C. frutescens*, called 'Mates Sor', was collected only in northwestern Cambodia. "Sor" means "white" in Khmer, and the immature fruit of the variety is white. Another variety, called 'Mates Chong Ol Mak', was collected in Battambang province. Yamamoto *et al*. (2011) identified 'Mates Chong Ol Mak' as *C. annuum*, however we identified it as *C. frutescens.* "Chong Ol Mak" means "pointing toward the sky". Therefore it needs to identify the collected accessions again with observation of the character in their fruit and plant on cultivation experience.

In Cambodia, fresh fruits of chili peppers from small-fruited varieties such as 'Mates Dai Neang', 'Mates Ach Sath' and 'Mates Sor' are used to make a condiment by soaking them in vinegar (Photo 7). We also found the paste of roasted chili peppers used as a condiment (Photo 8) in the northwestern region. In comparison with the cuisine of neighboring Thailand, Cambodian cuisine uses fewer chili peppers in daily meals, so we found fewer chili peppers and fewer varieties of chili peppers in each market. Unlike the situation in Thailand, where most farmers grow chili peppers in their fields or kitchen gardens, most of the farmers we met in Cambodia did not grow chili peppers.

According to Yamamoto (2011), 11 varieties of *C. annuum* and 17 varieties of *C. frutescens* are grown in Cambodia. In our survey we collected 49 accessions belonging to only 7 varieties. Therefore, we

should continue to explore the genetic resources of chili pepper in other regions of Cambodia.

2)Eggplants

We collected 12 accessions of eggplant in this survey. We observed eggplant fruits with a variety of characteristics (Photo 9), for example, slightly flattened, round, and elongated shapes; large and small sizes; and light green, purple, light purple and yellow colors. Almost all eggplants with elongated large purple fruits were expected to be imported cultivars, so we did not collect that type of eggplant in most cases. On the other hand, eggplants with round or flattened shape, small size (3-5 cm long) and light green or green stripes on light green skin (Photo 10) were very likely to be Cambodian landraces, so we collected those types. Most eggplants sold in markets were immature fruits, but occasionally mature fruits were sold (Photo 11). Sometimes we were served with raw young eggplant fruits in salad (Photo 12).

The local common names of eggplants in Cambodia differed depending on fruit shape, size and color. Fruits that were slightly flattened or round and light green in color at an immature stage were called 'Trop Sroy', those with a similar shape and color but with stripes on the fruit surface were called 'Trop Pong Rolork', and those with elongated shape and purple color were called 'Trop Veng'.

(b) Cucurbitaceae crops

The number of Cucurbitaceae accessions collected in this survey was initially counted as 46, consisting of 24 accessions of melon (locally called 'Tror Sork Srov'), 13 accessions of pumpkin ('La Poa'), 6 accessions of wax gourd and 3 accessions of other Cucurbitaceae crops (2 of watermelon ['Ov Lek'], 1 of *Luffa acutangula* ['No Nong Chrong']). However, 13 of the melon accessions were collected from farmers as seeds. These seeds showed much variation in size and shape (Photo 13), and based on these traits, could be separated into two or three types. These types were treated as different accessions when registered with NIAS, giving final totals of 41 accessions of melon and 63 of Cucurbitaceae crops (Table 2).

Traders and local farmers sold both young and mature Cucurbitaceae fruits such as melon, cucumber, watermelon, wax gourd, pumpkin and *Luffa acutangula* (angled luffa) (Photo 14). These Cucurbitaceae crops were not only cultivated near the markets, but also transported from other provinces. In Cambodia, Cucurbitaceae crops such as cucumber, wax gourd and luffa are planted on ridges covered by plastic sheets, and the stems and fruit are hung on a net to keep them off the ground (Photo 15). Fertilizer and pesticide are used, indicating strict maintenance of the cultivation. Seeds for the next season are collected by farmers themselves (Photo 16) or commercial seeds produced by seed companies are also bought in market (Photo 17).

In the case of melon, cultivation is typically begun at the beginning of the rainy season (May to June), the end of rainy season (November to December), and/or February to March, but, interestingly, a farmer in Otaki village, Battambang, sowed the seed in late July and January for double cropping. Melon seed is soaked in water and then a couple of seeds are dropped into a hole on a ridge and covered with soil. The plants are allowed to grow on the ground (Photo 18). Cow dung is normally used for fertilizer, which is applied at sowing and at flowering time. Pesticide is used for powdery mildew and some other fungal diseases. Young and mature fruits are harvested starting one and a half months or three months after sowing, respectively. The first fruits harvested each season are set aside to produce seed for the following season. The number of fruits saved depends on the type of fruit, the area to be planted and the desired

planting density. Local people use younger melon fruit as a vegetable and to make pickles, which are sold in the market (Photo 19). Mature melon fruit is used as a dessert and eaten with sugar and/or coconut milk. The culinary uses for younger and mature fruits were similar to those of local melon 'Momordica' in East India (Kato *et al*. 2006; Tanaka *et al*. 2014), and younger fruit of 'Conomon' in East Asia.

Of the 41 melon accessions, 6 were collected as mature fruit which showed variation in length (25.3 ± 4.6 cm), width (11.0 ± 2.0 cm) and weight (1.6 ± 0.4 kg) (Photo 19). The fruit surfaces had dark, light green, or yellow skin color with or without a striped outer rind surface, but none of the surfaces were netted (Photo 20). Fruit flesh was green in the outer part, light green or light yellow in the inner part, and had a somewhat mealy texture, like that of 'Momordica' melon in South Asia (Dhillon *et al*. 2012). Fruit placenta color was also variable, being white, yellow or orange, but all fruits were non-sweet, with Brix of flesh juice below 5.0°. Based on the flower scars on the fruit, the plants of these accessions appeared to be monoecious. The seed length was less than 9.5 mm in all accessions, placing them in the category of "small-seed-type" melon according to Fujishita (1983). In contrast, seed size and shape varied in melon accessions collected as seed from farmers because those seeds were collected from many fruits (Photo 16); in such cases, we separated the seeds into two or three different accessions (Photo 13).

Many kinds of Cucurbitaceae crops were found in Cambodia. In particular, both younger and mature melon fruits were used in a variety of foods, similar to those in East India, and East Asia Melon fruit and seed showed much variation, especially in the fruit flesh, and the mealy texture found in 'Momordica' melon from South Asia was also observed in Cambodian melon. We expect the Cucurbitaceae genetic resources collected in this survey to be useful as a possible source of agricultural traits such as disease resistance and for phylogenetic studies of melons in not only Cambodia, but also South Asia, Southeast Asia and East Asia.

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カンボジアにおけるナス科・ウリ科野菜遺伝資源の共同探索 , 2014 年

松永 啓 [1)]・松島 憲一 [2)]・田中 克典 [3)]・Simso THEAVY[4)]・
Seang LAY HENG[4)]・Ty CHANNA[4)]・高橋 有 [5), 6)]・友岡 憲彦 [5)]

1) 農業・食品産業技術総合研究機構・野菜茶業研究所
2) 信州大学
3) 弘前大学
4) カンボジア農業研究機構
5) 農業生物資源研究所・遺伝資源センター
6) 日本学術振興会・特別研究員 PD

和文摘要

本報告は，独立行政法人農業生物資源研究所ジーンバンクとカンボジア農業研究機構の間で 2014 年に締結した共同研究契約（JRA）に基づいて行われた，第 1 回目のカンボジアにおけるナス科およびウリ科野菜遺伝資源探索の調査報告である．探索調査は，2014 年 11 月 9 日～ 11 月 22 日にかけて実施され，トウガラシおよびメロンを中心としたナス科およびウリ科野菜を対象とした．今回は，カンボジア西部および北西部地域であるコンポンチュナン州，ポーサット州，バッタンバン州，パイリン州，バンテイメンチェイ州およびウドメンチェイ州を調査し，トウガラシ 49 点，ナス 12 点，メロン 41 点，カボチャ 13 点，トウガン 6 点その他のウリ科野菜 3 点の合計 124 点の種子を収集した．これらの遺伝資源のうち，カボチャ 1 点およびトウガン 3 点の合計 4 点は成熟種子を含まなかったので廃棄し，残りの 120 点カンボジア農業研究機構ジーンバンクにおいて保存するとともに，半量を標準材料移転契約（SMTA）に基づいて農業生物資源研究所ジーンバンクに移転・保存した．

Table 3. Pasport data of materials collected in western and northwestern Cambodia during the 2014 survey.

No.	Collection No.	Passport No.	JP No.	Local name	JP Name	Date	Genus & Species	Province /State	District	Village	North latitude/ East longitude	Altitude (m)	Source (Market name)	Status	Collected samples and remarks
1	1	30062369	253030	Mates Kdor Chhmar	COL/CAMBODIA/2014/NIVTS/001	Nov. 11	*Capsicum frutescens*	Kampong Chnang	Kampong Chnang	Kampong Chnang	12-15-14.3/ 104-40-13.0	10	Market (Leu)	landrace	fruits; harvested in Orolum village
2	2	30062370	253031	Mates Ach Sath	COL/CAMBODIA/2014/NIVTS/002	Nov. 11	*Capsicum frutescens*	Kampong Chnang	Kampong Chnang	Kampong Chnang	12-15-14.3/ 104-40-13.0	10	Market (Leu)	landrace	fruits
3	3	30062371	253032	La Poa	COL/CAMBODIA/2014/NIVTS/003	Nov. 11	*Cucurbita moschata*	Kampong Chnang	Kampong Chnang	Kampong Chnang	12-15-14.3/ 104-40-13.0	10	Market (Leu)	landrace	fruits; harvested in Kampot Province
4	4	30062372	253033	Mates Dai Neang	COL/CAMBODIA/2014/NIVTS/004	Nov. 11	*Capsicum annuum*	Kampong Chnang	Kampong Chnang	Kampong Chnang	12-15-14.3/ 104-40-13.0	10	Market (Leu)	landrace	fruits; harvested near Phnom Penh
5	5			Tror Lach Srouv		Nov. 11	*Benincasa hispida*	Kampong Chnang	Kampong Chnang	Pong Ro	12-16-43.3 104-35-30.1	22	Market (Pong Ro)	landrace	fruit; no mature seeds
6	6	30062373	253034	Trop Sroy	COL/CAMBODIA/2014/NIVTS/006	Nov. 11	*Solanum* spp.	Kampong Chnang	Kampong Chnang	Mong Baraing	12-15-1.6/ 104-39-57.12	18	Farmer's house	landrace	fruits
7	7	30062374	253035	Malaysian Mates	COL/CAMBODIA/2014/NIVTS/007	Nov. 12	*Capsicum annuum*	Pursat	Bakan	Aren	12-32-21.4/ 103-54-58.4	20	Market (Thmey)	unknown	fruits; originated in Malaysia
8	8	30062375	253036	Mates Dai Neang	COL/CAMBODIA/2014/NIVTS/008	Nov. 12	*Capsicum annuum*	Pursat	Bakan	Aren	12-32-21.4/ 103-54-58.4	20	Market (Thmey)	landrace	fruits, harvested in Dang Rong village
9	9	30062376	253037	Trop Sroy Porsvay	COL/CAMBODIA/2014/NIVTS/009	Nov. 12	*Solanum* spp.	Pursat	Phnom Kravanh	Leach	12-21-8.5/ 103-46-2.7	35	Market (Leach)	landrace	fruits, harvested in Por Svay village
10	10	30062377	253038	Mates Ach Sath	COL/CAMBODIA/2014/NIVTS/010	Nov. 12	*Capsicum frutescens*	Pursat	Phnom Kravanh	Leach	12-21-8.5/ 103-46-2.7	35	Market (Leach)	landrace	fruits; harvested in Prok Bei village
11	11	30062378	253039	La Poa Trou	COL/CAMBODIA/2014/NIVTS/011	Nov. 12	*Cucurbita moschata*	Pursat	Phnom Kravanh	Leach	12-21-8.5/ 103-46-2.7	35	Market (Leach)	landrace	fruit; harvested in Prek Bei village
12	12	30062379	253040	Mates Ach Sath	COL/CAMBODIA/2014/NIVTS/012	Nov. 12	*Capsicum frutescens*	Pursat	Phnom Kravanh	Leach	12-21-8.5/ 103-46-2.7	35	Market (Leach)	landrace	fruits
13	13			Tror Lach		Nov. 12	*Benincasa hispida*	Pursat	Phnom Kravanh	Leach	12-21-8.5/ 103-46-2.7	35	Market (Leach)	landrace	fruit, no mature seeds
14	14	30062380	253041	Mates Ach Sath	COL/CAMBODIA/2014/NIVTS/014	Nov. 12	*Capsicum frutescens*	Pursat	Phnom Kravanh	Bos Pouy	12-21-25.3/ 103-45-26.5	43	Farmer's yard	landrace	fruits
15	15	30062381	253042	Tror Sork Srov	COL/CAMBODIA/2014/NIVTS/015	Nov. 12	*Cucumis melo*	Pursat	Phnom Kravanh	Preaek Bei	12-21-14.5/ 103-45-4.9	22	Farmer's house	landrace	seeds
16	16	30062382	253043	Mates Dai Neang	COL/CAMBODIA/2014/NIVTS/016	Nov. 12	*Capsicum annuum*	Pursat	Phnom Kravanh	Preaek Bei	12-21-14.5/ 103-45-4.9	22	Farmer's yard	landrace	fruits
17	17-1	30062383	253044	Tror Sork Srov	COL/CAMBODIA/2014/NIVTS/017-1	Nov. 12	*Cucumis melo*	Pursat	Phnom Kravanh	Bak Tra	12-26-56.9/ 103-51-32.0	18	Farmer's house	landrace	seeds; large
18	17-2	30062384	253045	Tror Sork Srov	COL/CAMBODIA/2014/NIVTS/017-2	Nov. 12	*Cucumis melo*	Pursat	Phnom Kravanh	Bak Tra	12-26-56.9/ 103-51-32.0	18	Farmer's house	landrace	seeds; slender
19	17-3	30062385	253046	Tror Sork Srov	COL/CAMBODIA/2014/NIVTS/017-3	Nov. 12	*Cucumis melo*	Pursat	Phnom Kravanh	Bak Tra	12-26-56.9/ 103-51-32.0	18	Farmer's house	landrace	seeds; small
20	18	30062386	253047		COL/CAMBODIA/2014/NIVTS/018	Nov. 12	*Solanum melongena*	Pursat	Phnom Kravanh	Leach	12-21-8.5/ 103-46-2.7	35	Market (Leach)	landrace	fruits
21	19-1	30062387	253048	Tror Sork Srov	COL/CAMBODIA/2014/NIVTS/019-1	Nov. 13	*Cucumis melo*	Battambang	Bavel	Bavel	13-15-13.7/ 102-52-30.4	32	Market (Bavel)	cultivar	seeds (large) from Thailand (Seed Tech Marketing CO., LTD)
22	19-2	30062388	253049	Tror Sork Srov	COL/CAMBODIA/2014/NIVTS/019-2	Nov. 13	*Cucumis melo*	Battambang	Bavel	Bavel	13-15-13.7/ 102-52-30.4	32	Market (Bavel)	cultivar	seeds (small) from Thailand (Seed Tech Marketing CO., LTD)
23	20	30062389	253050		COL/CAMBODIA/2014/NIVTS/020	Nov. 13	*Solanum* spp.	Battambang	Bavel	Bavel	13-15-13.7/ 102-52-30.4	32	Market (Bavel)	cultivar	seeds from Thailand (Seed Tech Marketing CO., LTD), 'Modern M-16'
24	21	30062390	253051	Mates	COL/CAMBODIA/2014/NIVTS/021	Nov. 13	*Capsicum* spp.	Battambang	Bavel	Bavel	13-15-13.7/ 102-52-30.4	32	Market (Bavel)	cultivar	seeds from Thailand (Chia Tai CO. LTD), 'Bird pepper'
25	22	30062391	253052	Mates Dai Neang	COL/CAMBODIA/2014/NIVTS/022	Nov. 13	*Capsicum* spp.	Battambang	Bavel	Bavel	13-15-13.7/ 102-52-30.4	32	Market (Bavel)	cultivar	dry fruits (small) harvested near Battambang
26	23	30062392	253053	Kro Hom	COL/CAMBODIA/2014/NIVTS/023	Nov. 13	*Capsicum* spp.	Battambang	Bavel	Bavel	13-15-13.7/ 102-52-30.4	32	Market (Bavel)	landrace	dry fruits (large) harvested in Kandal Province

Table 3 (Continued).

No.	Collection No.	Passport No.	JP No.	Local name	JP Name	Date	Genus & Species	Province /State	District	Village	North latitude/ East longitude	Altitude (m)	Source (Market name)	Status	Collected samples and remarks
27	24	30062393	253054	Mates Ach Sath	COL/CAMBODIA/2014/NIVTS/024	Nov. 13	*Capsicum frutescens*	Battambang	Bavel	Bavel	13-15-13.7/ 102-52-30.4	32	Market (Bavel)	landrace	fruits; harvested near Bavel village
28	25	30062394	253055	Mates Plok	COL/CAMBODIA/2014/NIVTS/025	Nov. 13	*Capsicum annuum*	Battambang	Bavel	Bavel	13-15-13.7/ 102-52-30.4	32	Market (Bavel)	landrace	fruits; harvested near Bavel village
29	26	30062395	253056	Mates Dai Neang	COL/CAMBODIA/2014/NIVTS/026	Nov. 13	*Capsicum annuum*	Battambang	Bavel	Bavel	13-15-13.7/ 102-52-30.4	32	Market (Bavel)	landrace	fruits; harvested near Bavel village
30	27	30062396	253057	Mates Chong Ol Mak	COL/CAMBODIA/2014/NIVTS/027	Nov. 13	*Capsicum frutescens*	Battambang	Bavel	Bavel	13-15-13.7/ 102-52-30.4	32	Market (Bavel)	landrace	fruits; harvested near Bavel village
31	28	30062397	253058	Mates Ach Sath	COL/CAMBODIA/2014/NIVTS/028	Nov. 13	*Capsicum frutescens*	Battambang	Bavel	Bavel	13-15-13.7/ 102-52-30.4	32	Market (Bavel)	landrace	fruits; harvested near Bavel village
32	29	30062398	253059	La Poa	COL/CAMBODIA/2014/NIVTS/029	Nov. 13	*Cucurbita moschata*	Battambang	Bavel	Bavel	13-15-13.7/ 102-52-30.4	32	Market (Bavel)	landrace	fruit; orange outer rind color
33	30-1	30062399	253060	Tror Sork Srov	COL/CAMBODIA/2014/NIVTS/030-1	Nov. 13	*Cucumis melo*	Battambang	Bavel	Saing Raing	13-15-57.0/ 102-54-44.7	54	Farmer's house	landrace	seeds; large
34	30-2	30062400	253061	Tror Sork Srov	COL/CAMBODIA/2014/NIVTS/030-2	Nov. 13	*Cucumis melo*	Battambang	Bavel	Saing Raing	13-15-57.0/ 102-54-44.7	54	Farmer's house	landrace	seeds; slender
35	30-3	30062401	253062	Tror Sork Srov	COL/CAMBODIA/2014/NIVTS/030-3	Nov. 13	*Cucumis melo*	Battambang	Bavel	Saing Raing	13-15-57.0/ 102-54-44.7	54	Farmer's house	landrace	seeds; small
36	31	30062402	253063	Trop Khar	COL/CAMBODIA/2014/NIVTS/031	Nov. 13	*Solanum* spp.	Battambang	Bavel	Souh Sla	13-13-21.4/ 102-51-17.4	42	Farmer's yard	landrace	fruits
37	32	30062403	253064	La Poa	COL/CAMBODIA/2014/NIVTS/032	Nov. 13	*Cucurbita moschata*	Battambang	Bavel	Souh Sla	13-13-21.4/ 102-51-17.4	42	Farmer's house	landrace	seeds
38	33	30062404	253065	No Nong Chrong	COL/CAMBODIA/2014/NIVTS/033	Nov. 13	*Luffa acutangula*	Battambang	Bavel	Souh Sla	13-13-21.4/ 102-51-17.4	42	Farmer's house	landrace	seeds
39	34	30062405	253066	Tror Lach Srouv	COL/CAMBODIA/2014/NIVTS/034	Nov. 13	*Benincasa hispida*	Battambang	Bavel	Souh Sla	13-13-21.4/ 102-51-17.4	42	Farmer's house	landrace	seeds
40	35-1	30062406	253067	Tror Sork Srov	COL/CAMBODIA/2014/NIVTS/035-1	Nov. 13	*Cucumis melo*	Battambang	Bavel	Souh Sla	13-13-14.6/ 102-51-9.3	40	Farmer's house	landrace	seeds; large
41	35-2	30062407	253068	Tror Sork Srov	COL/CAMBODIA/2014/NIVTS/035-2	Nov. 13	*Cucumis melo*	Battambang	Bavel	Souh Sla	13-13-14.6/ 102-51-9.3	40	Farmer's house	landrace	seeds; small
42	36	30062408	253069	Mates Ach Sath	COL/CAMBODIA/2014/NIVTS/036	Nov. 13	*Capsicum frutescens*	Battambang	Bavel	Souh Sla	13-13-14.6/ 102-51-9.3	40	Farmer's yard	landrace	fruits
43	37	30062409	253070	La Poa	COL/CAMBODIA/2014/NIVTS/037	Nov. 13	*Cucurbita moschata*	Battambang	Bavel	Boeung Por Poul	13-17-22.0/ 102-41-28.1	49	Farmer's house	landrace	seeds
44	38	30062410	253071	Tror Sork Srov	COL/CAMBODIA/2014/NIVTS/038	Nov. 13	*Cucumis melo*	Battambang	Bavel	Boeung Por Poul	13-17-22.0/ 102-41-28.1	49	Farmer's house	landrace	seeds
45	39	30062411	253072	Tror Lach Srouv	COL/CAMBODIA/2014/NIVTS/039	Nov. 13	*Benincasa hispida*	Battambang	Bavel	Boeung Por Poul	13-17-22.0/ 102-41-28.1	49	Farmer's house	landrace	seeds
46	40	30062412	253073	Mates Ach Sath	COL/CAMBODIA/2014/NIVTS/040	Nov. 13	*Capsicum frutescens*	Battambang	Bavel	Boeung Por Poul	13-17-22.0/ 102-41-28.1	49	Farmer's yard	landrace	fruits
47	41	30062413	253074	Mates Sor	COL/CAMBODIA/2014/NIVTS/041	Nov. 13	*Capsicum frutescens*	Battambang	Bavel	Boeung Por Poul	13-17-22.0/ 102-41-28.1	49	Farmer's yard	landrace	fruits
48	42	30062414	253075	Mates Dai Neang	COL/CAMBODIA/2014/NIVTS/042	Nov. 13	*Capsicum annuum*	Battambang	Bavel	Boeung Por Poul	13-17-22.0/ 102-41-28.1	49	Farmer's yard	landrace	fruits
49	43	30062415	253076	Mates Dai Neang	COL/CAMBODIA/2014/NIVTS/043	Nov. 14	*Capsicum annuum*	Battambang	Ratanak Mondol	Chi Pang	12-50-1.4/ 102-53-40.0	46	Market (Chhev)	landrace	fruits; harvested in Chi Pang village
50	44	30062416	253077	La Poa	COL/CAMBODIA/2014/NIVTS/044	Nov. 14	*Cucurbita moschata*	Battambang	Ratanak Mondol	Chi Pang	12-50-1.4/ 102-53-40.0	46	Market (Chhev)	landrace	seeds; harvested in Svay sar village
51	45	30062417	253078	Mates Ach Sath	COL/CAMBODIA/2014/NIVTS/045	Nov. 14	*Capsicum frutescens*	Battambang	Ratanak Mondol	Chi Pang	12-50-1.4/ 102-53-40.0	46	Market (Chhev)	landrace	fruits; harvested in Chi Pang village
52	46	30062418	253079	Trop Khar	COL/CAMBODIA/2014/NIVTS/046	Nov. 14	*Solanum* spp.	Battambang	Ratanak Mondol	Chi Pang	12-50-1.4/ 102-53-40.0	46	Market (Chhev)	landrace	fruits; harvested in Chi Pang village

Table 3 (Continued).

No.	Collection No.	Passport No.	JP No.	Local name	JP Name	Date	Genus & Species	Province /State	District	Village	North latitude/ East longitude	Altitude (m)	Source (Market name)	Status	Collected samples and remarks
53	47	30062419	253080	Mates Dai Neang	COL/CAMBODIA/2014/NIVTS/047	Nov. 14	*Capsicum annuum*	Battambang	Ratanak Mondol	Chi Pang	12-50-1.4/ 102-53-40.0	46	Market (Chhev)	landrace	fruits; harvested in Kilo 38 village
54	48	30062420	253081	La Poa	COL/CAMBODIA/2014/NIVTS/048	Nov. 14	*Cucurbita moschata*	Battambang	Ratanak Mondol	Chi Pang	12-50-1.4/ 102-53-40.0	46	Market (Chhev)	landrace	fruits; harvested in Ov Lek village, green outer rind color
55	49	30062421	253082	Mates Ken	COL/CAMBODIA/2014/NIVTS/049	Nov. 14	*Capsicum* spp.	Battambang	Ratanak Mondol	Chi Pang	12-50-1.4/ 102-53-40.0	46	Market (Chhev)	landrace	fruits; harvested in Battambang
56	50	30062422	253083	Mates Dai Neang	COL/CAMBODIA/2014/NIVTS/050	Nov. 14	*Capsicum annuum*	Pailin	Pailin	Pailin	12-51-33.9/ 102-36-14.0	160	Market (Samaki)	landrace	fruits; harvested in Battambang
57	51	30062423	253084	Mates Ach Sath	COL/CAMBODIA/2014/NIVTS/051	Nov. 14	*Capsicum frutescens*	Pailin	Pailin	Pailin	12-51-33.9/ 102-36-14.0	160	Market (Samaki)	landrace	fruits; harvested in Phnom Khtev village (near Pailin)
58	52	30062424	253085	La Poa	COL/CAMBODIA/2014/NIVTS/052	Nov. 14	*Cucurbita moschata*	Pailin	Pailin	Pailin	12-51-33.9/ 102-36-14.0	160	Market (Samaki)	landrace	fruits; harvested in Soun Ampao village
59	53	30062425	253086	La Poa	COL/CAMBODIA/2014/NIVTS/053	Nov. 14	*Cucurbita moschata*	Pailin	Pailin	Pailin	12-51-33.9/ 102-36-14.0	160	Market (Samaki)	landrace	fruits; harvested in Pailin, green outer rind color
60	54	30062426	253087	Mates Ach Sath	COL/CAMBODIA/2014/NIVTS/054	Nov. 14	*Capsicum frutescens*	Pailin	Pailin	Pailin	12-51-33.9/ 102-36-14.0	160	Market (Samaki)	landrace	fruits; harvested in Pailin
61	55-1	30062427	253088	Tror Sork Srov	COL/CAMBODIA/2014/NIVTS/055-1	Nov. 14	*Cucumis melo*	Pailin	Pailin	Suon Ampao Lech	12-51-58.6/ 102-36-15.6	168	Farmer's house	landrace	seeds; large
62	55-2	30062428	253089	Tror Sork Srov	COL/CAMBODIA/2014/NIVTS/055-2	Nov. 14	*Cucumis melo*	Pailin	Pailin	Suon Ampao Lech	12-51-58.6/ 102-36-15.6	168	Farmer's house	landrace	seeds; small
63	56-1	30062429	253090	Tror Sork Srov	COL/CAMBODIA/2014/NIVTS/056-1	Nov. 14	*Cucumis melo*	Pailin	Pailin	Roth Kros Ches	12-53-56.6/ 102-34-22.6	187	Farmer's house	landrace	seeds; large
64	56-2	30062430	253091	Tror Sork Srov	COL/CAMBODIA/2014/NIVTS/056-2	Nov. 14	*Cucumis melo*	Pailin	Pailin	Roth Kros Ches	12-53-56.6/ 102-34-22.6	187	Farmer's house	landrace	seeds; slender
65	56-3	30062431	253092	Tror Sork Srov	COL/CAMBODIA/2014/NIVTS/056-3	Nov. 14	*Cucumis melo*	Pailin	Pailin	Roth Kros Ches	12-53-56.6/ 102-34-22.6	187	Farmer's house	landrace	seeds; small
66	57	30062432	253093	Tror Lach	COL/CAMBODIA/2014/NIVTS/057	Nov. 14	*Benincasa hispida*	Pailin	Pailin	Roth Kros Ches	12-53-56.6/ 102-34-22.6	187	Farmer's house	landrace	fruits; very large
67	58	30062433	253094	Tror Sork Srov	COL/CAMBODIA/2014/NIVTS/058	Nov. 14	*Cucumis melo*	Pailin	Pailin	Tamey	12-50-44.2/ 102-34-44.1	224	Farmer's house	landrace	fruits; light green outer rind color
68	59-1	30062434	253095	Tror Sork Srov	COL/CAMBODIA/2014/NIVTS/059-1	Nov. 14	*Cucumis melo*	Pailin	Pailin	Tamey	12-50-44.2/ 102-34-44.1	224	Farmer's house	landrace	seeds; collected in three kinds of fruits, large seeds
69	59-2	30062435	253096	Tror Sork Srov	COL/CAMBODIA/2014/NIVTS/059-2	Nov. 14	*Cucumis melo*	Pailin	Pailin	Tamey	12-50-44.2/ 102-34-44.1	224	Farmer's house	landrace	seeds; collected in three kinds of fruits, small seeds
70	60	30062436	253097	Tror Sork Srov	COL/CAMBODIA/2014/NIVTS/060	Nov. 14	*Cucumis melo*	Pailin	Pailin	Tamey	12-50-42.4/ 102-34-35.8	226	Field	cultivar	fruits; harvested in Thailand, striped outer rind color
71	61	30062437	253098	Mates Dai Neang	COL/CAMBODIA/2014/NIVTS/061	Nov. 15	*Capsicum annuum*	Pailin	Pailin	Salakrav	12-56-45.9/ 102-35-32.9	134	Market (Salakrav)	landrace	fruits; harvested in O Nonong village
72	62	30062438	253099	Mates Ach Sath	COL/CAMBODIA/2014/NIVTS/062	Nov. 15	*Capsicum frutescens*	Pailin	Pailin	Salakrav	12-56-45.9/ 102-35-32.9	134	Market (Salakrav)	landrace	fruits; harvested in O Don Ta village
73	63	30062439	253100	Tror Sork Srov	COL/CAMBODIA/2014/NIVTS/063	Nov. 15	*Cucumis melo*	Battambang	Kam Reang	Otaki	13-06-42.7/ 102-31-7.1	70	Farmer's house	landrace	fruits; yellow outer rind surface, seed obtained from a farmer in Battambang
74	64	30062440	253101	Tror Sork Srov	COL/CAMBODIA/2014/NIVTS/064	Nov. 15	*Cucumis melo*	Battambang	Kam Reang	Otaki	13-06-42.7/ 102-31-7.1	70	Farmer's house	landrace	fruits; yellow outer rind surface, seed obtained from a farmer in Battambang
75	65	30062441	253102	Tror Sork Srov	COL/CAMBODIA/2014/NIVTS/065	Nov. 15	*Cucumis melo*	Battambang	Kam Reang	Otaki	13-06-42.7/ 102-31-7.1	70	Field	landrace	fruits; green stripe outer rind color, seed obtained from a farmer in Battambang
76	66	30062442	253103	Trop Sroy	COL/CAMBODIA/2014/NIVTS/066	Nov. 15	*Solanum* spp.	Battambang	Ek Phnom	Sdey	13-10-44.4/ 103-14-37.0	10	Farmer's yard	landrace	fruits
77	67	30062443	253104	Trop Veng	COL/CAMBODIA/2014/NIVTS/067	Nov. 15	*Solanum melongena*	Battambang	Ek Phnom	Rohasoung	13-11-44.3/ 103-14-41.5	-2	Farmer's yard	landrace	fruits
78	68-1	30062444	253105	Tror Sork Srov	COL/CAMBODIA/2014/NIVTS/068-1	Nov. 15	*Cucumis melo*	Battambang	Ek Phnom	Rohasoung	13-11-44.3/ 103-14-41.5	-2	Farmer's house	landrace	seed; large

Table 3 (Continued).

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79	68-2	30062445	253106	Tror Sork Srov	COL/CAMBODIA/2014/NIVTS/068-2	Nov. 15	*Cucumis melo*	Battambang	Ek Phnom	Rohasoung	13-11-44.3/ 103-14-41.5	-2	Farmer's house	landrace	seed; small
80	69	30062446	253107	Mates Ach Sath	COL/CAMBODIA/2014/NIVTS/069	Nov. 15	*Capsicum frutescens*	Battambang	Ek Phnom	Rohasoung	13-11-44.3/ 103-14-41.5	-2	Farmer's yard	landrace	fruits
81	70	30062447	253108	Tror Sork Srov	COL/CAMBODIA/2014/NIVTS/070	Nov. 15	*Cucumis melo*	Battambang	Ek Phnom	Reach Don Keo	13-11-28.4/ 103-15-47.0	10	Farmer's house	landrace	seeds; striped outer rind color (fruits)
82	71	30062448	253109	Tror Sork Srov	COL/CAMBODIA/2014/NIVTS/071	Nov. 15	*Cucumis melo*	Battambang	Ek Phnom	Reach Don Keo	13-11-28.4/ 103-15-47.0	10	Farmer's house	landrace	seeds; orange outer rind color (fruits)
83	72	30062449	253110	Trop Sroy	COL/CAMBODIA/2014/NIVTS/072	Nov. 15	*Solanum* spp.	Battambang	Ek Phnom	Reach Don Keo	13-11-28.4/ 103-15-47.0	10	Farmer's house	landrace	seeds
84	73	30062450	253111	Mates Ach Sath	COL/CAMBODIA/2014/NIVTS/073	Nov. 15	*Capsicum frutescens*	Battambang	Ek Phnom	Battambang	13-06-8.5/ 103-11-52.6	24	Market (Battambang)	landrace	fruits; harvested in Bannan District
85	74	30062451	253112	Mates Dai Neang	COL/CAMBODIA/2014/NIVTS/074	Nov. 15	*Capsicum annuum*	Battambang	Ek Phnom	Battambang	13-06-8.5/ 103-11-52.6	24	Market (Battambang)	landrace	fruits; harvested in Moung District
86	75	30062452	253113	La Poa	COL/CAMBODIA/2014/NIVTS/075	Nov. 15	*Cucurbita moschata*	Battambang	Ek Phnom	Battambang	13-06-8.5/ 103-11-52.6	24	Market (Battambang)	landrace	fruits; harvested near Battambang, orange outer rind color,
87	76	30062453	253114	Tror Sork Srov	COL/CAMBODIA/2014/NIVTS/076	Nov. 16	*Cucumis melo*	Battambang	Ek Phnom	Battambang	13-05-56.4/ 103-11-52.4	1	Restaurant	landrace	fruits; harvested in Prev Trop village, dark orange outer rind color,
88	77	30062454	253115	Mates Dai Neang	COL/CAMBODIA/2014/NIVTS/077	Nov. 16	*Capsicum annuum*	Banteay Meanchey	Sisophon	Pong Ro	13-37-21.9/ 102-57-45.1	10	Market (Pong Ro)	landrace	fruits; harvested in Pong Ro village
89	78	30062455	253116	Tror Sork Srov	COL/CAMBODIA/2014/NIVTS/078	Nov. 16	*Cucumis melo*	Banteay Meanchey	Sisophon	Pong Ro	13-37-21.9/ 102-57-45.1	10	Market (Pong Ro)	landrace	seeds; collected from fruits harvested in 2 km village
90	79	30062456	253117	La Poa	COL/CAMBODIA/2014/NIVTS/079	Nov. 16	*Cucurbita moschata*	Banteay Meanchey	Sisophon	Pong Ro	13-37-21.9/ 102-57-45.1	10	Market (Pong Ro)	landrace	seeds; orange outer rind color (fruits)
91	80	30062457	253118	Mates	COL/CAMBODIA/2014/NIVTS/080	Nov. 16	*Capsicum annuum*	Banteay Meanchey	Mongkal Borei	Dong Ram Keith	13-29-48.4/ 103-2-38.4	10	Farm store	landrace	fruits; harvested in Dong Ram Keith
92	81-1	30062458	253119	Tror Sork Srov	COL/CAMBODIA/2014/NIVTS/081-1	Nov. 16	*Cucumis melo*	Banteay Meanchey	Mongkal Borei	Samrong Pein	13-29-35.4/ 103-2-2.7	14	Farm store	landrace	seeds; collected from fruits harvested by farmer, large seed
93	81-2	30062459	253120	Tror Sork Srov	COL/CAMBODIA/2014/NIVTS/081-2	Nov. 16	*Cucumis melo*	Banteay Meanchey	Mongkal Borei	Samrong Pein	13-29-35.4/ 103-2-2.7	14	Farm store	landrace	seeds; collected from fruits harvested by farmer, small seed
94	82	30062460	253121	Ov Lek	COL/CAMBODIA/2014/NIVTS/082	Nov. 16	*Citrullus lanatus*	Banteay Meanchey	Sisophon	Pong Ro	13-37-21.9/ 102-57-45.1	10	Market (Pong Ro)	cultivar	dark green outer rind color, fruits; harvested in Huy Leng market
95	83	30062461	253122	Ov Lek	COL/CAMBODIA/2014/NIVTS/083	Nov. 16	*Citrullus lanatus*	Banteay Meanchey	Sisophon	Pong Ro	13-37-21.9/ 102-57-45.1	10	Market (Pong Ro)	cultivar	fruits; collected in Huy Leng market, light green outer rind color
96	84	30062462	253123	Mates Ach Sath	COL/CAMBODIA/2014/NIVTS/084	Nov. 16	*Capsicum frutescens*	Banteay Meanchey	Phnom Srok	Svay	13-36-9.3/ 102-58-10.8	20	Market (Chamcar Kor)	landrace	fruits; harvested in Svay
97	85	30062463	253124	Mates Dai Neang	COL/CAMBODIA/2014/NIVTS/085	Nov. 16	*Capsicum annuum*	Banteay Meanchey	Phnom Srok	Svay	13-36-9.3/ 102-58-10.8	20	Market (Chamcar Kor)	landrace	fruits
98	86	30062464	253125	Mates Dai Neang	COL/CAMBODIA/2014/NIVTS/086	Nov. 16	*Capsicum annuum*	Banteay Meanchey	Phnom Srok	Svay	13-36-9.3/ 102-58-10.8	20	Market (Chamcar Kor)	landrace	fruits; harvested in Svay Chev village
99	87-1	30062465	253126	Mates	COL/CAMBODIA/2014/NIVTS/087-1	Nov. 17	*Capsicum annuum*	Oddar Meanchey	Samrong	Samrong	14-10-32.0/ 103-30-21.1	42	Market (Samrong)	landrace	fruits; harvested in Chres village, large
100	87-2	30062466	253127	Mates	COL/CAMBODIA/2014/NIVTS/087-2	Nov. 17	*Capsicum annuum*	Oddar Meanchey	Samrong	Samrong	14-10-32.0/ 103-30-21.1	42	Market (Samrong)	landrace	fruits; harvested in Chres village, small
101	88	30062467	253128	Mates Ach Sath	COL/CAMBODIA/2014/NIVTS/088	Nov. 17	*Capsicum frutescens*	Oddar Meanchey	Samrong	Samrong	14-10-32.0/ 103-30-21.1	42	Market (Samrong)	landrace	fruits; harvested in Samrong village
102	89	30062468	253129	Mates Krohom	COL/CAMBODIA/2014/NIVTS/089	Nov. 17	*Capsicum annuum*	Oddar Meanchey	Samrong	Samrong	14-10-32.0/ 103-30-21.1	42	Market (Samrong)	landrace	fruits; harvested in Kompong Cham
103	90			La Poa		Nov. 17	*Cucurbita moschata*	Oddar Meanchey	Samrong	Samrong	14-10-32.0/ 103-30-21.1	42	Market (Samrong)	cultivar	fruits; harvested in Phnet village, no mature seeds
104	91	30062469	253130	Mates	COL/CAMBODIA/2014/NIVTS/091	Nov. 17	*Capsicum annuum*	Oddar Meanchey	Samrong	Samrong	14-10-32.0/ 103-30-21.1	42	Market (Samrong)	landrace	fruits; harvested in Siem Reap

Table 3 (Continued).

No.	Collection No.	Passport No.	JP No.	Local name	JP Name	Date	Genus & Species	Province /State	District	Village	North latitude/ East longitude	Altitude (m)	Source (Market name)	Status	Collected samples and remarks
105	92	30062470	253131	La Poa	COL/CAMBODIA/2014/NIVTS/092	Nov. 17	*Cucurbita moschata*	Oddar Meanchey	Samrong	Samrong	14-10-32.0/ 103-30-21.1	42	Market (Samrong)	landrace	fruits; harvested near market, orange outer rind color
106	93	30062471	253132	Trop Sroy	COL/CAMBODIA/2014/NIVTS/093	Nov. 17	*Solanum* spp.	Oddar Meanchey	Samrong	Oresey	14-9-3.2/ 103-31-31.7	44	Farmer's yard	landrace	fruits
107	94-1	30062472	253133	Tror Sork Srov	COL/CAMBODIA/2014/NIVTS/094-1	Nov. 17	*Cucumis melo*	Oddar Meanchey	Samrong	Oresey	14-9-3.2/ 103-31-31.7	44	Farmer's house	landrace	seeds; large
108	94-2	30062473	253134	Tror Sork Srov	COL/CAMBODIA/2014/NIVTS/094-2	Nov. 17	*Cucumis melo*	Oddar Meanchey	Samrong	Oresey	14-9-3.2/ 103-31-31.7	44	Farmer's house	landrace	seeds; slender
109	94-3	30062474	253135	Tror Sork Srov	COL/CAMBODIA/2014/NIVTS/094-3	Nov. 17	*Cucumis melo*	Oddar Meanchey	Samrong	Oresey	14-9-3.2/ 103-31-31.7	44	Farmer's house	landrace	seeds; small
110	95-1	30062475	253136	Tror Sork Srov	COL/CAMBODIA/2014/NIVTS/095-1	Nov. 17	*Cucumis melo*	Oddar Meanchey	Samrong	Kok Chhes	14-8-9.0/ 103-31-58.1	44	Farmer's house	landrace	seeds; large
111	95-2	30062476	253137	Tror Sork Srov	COL/CAMBODIA/2014/NIVTS/095-2	Nov. 17	*Cucumis melo*	Oddar Meanchey	Samrong	Kok Chhes	14-8-9.0/ 103-31-58.1	44	Farmer's house	landrace	seeds; small
112	96	30062477	253138	Mates Sor	COL/CAMBODIA/2014/NIVTS/096	Nov. 17	*Capsicum frutescens*	Oddar Meanchey	Kon Krel	Champa Sok	14-16-55.7/ 103-36-25.2	57	Farmer's yard	landrace	fruits
113	97	30062478	253139	Trop Sroy	COL/CAMBODIA/2014/NIVTS/097	Nov. 17	*Solanum* spp.	Oddar Meanchey	Samrong	Chheb	14-6-32.8/ 103-33-4.4	44	Farmer's house	landrace	fruits
114	98-1	30062479	253140	Tror Sork Srov	COL/CAMBODIA/2014/NIVTS/098-1	Nov. 17	*Cucumis melo*	Oddar Meanchey	Samrong	Chheb	14-6-32.8/ 103-33-4.4	44	Farmer's house	landrace	seeds; large
115	98-2	30062480	253141	Tror Sork Srov	COL/CAMBODIA/2014/NIVTS/098-2	Nov. 17	*Cucumis melo*	Oddar Meanchey	Samrong	Chheb	14-6-32.8/ 103-33-4.4	44	Farmer's house	landrace	seed; small
116	99-1	30062481	253142	Tror Sork Srov	COL/CAMBODIA/2014/NIVTS/099-1	Nov. 18	*Cucumis melo*	Oddar Meanchey	Samrong	Kol Thmey	14-13-45.9/ 103-34-26.1	51	Farmer's house	landrace	seeds; large
117	99-2	30062482	253143	Tror Sork Srov	COL/CAMBODIA/2014/NIVTS/099-2	Nov. 18	*Cucumis melo*	Oddar Meanchey	Samrong	Kol Thmey	14-13-45.9/ 103-34-26.1	51	Farmer's house	landrace	seed; small
118	100	30062483	253144	Trop Sroy	COL/CAMBODIA/2014/NIVTS/100	Nov. 18	*Solanum* spp.	Oddar Meanchey	Samrong	Kol Thmey	14-13-45.9/ 103-34-26.1	51	Farmer's house	landrace	seeds
119	101	30062484	253145	Mates	COL/CAMBODIA/2014/NIVTS/101	Nov. 18	*Capsicum annuum*	Oddar Meanchey	Banteay Ompil	Kok Mon	14-9-44.7/ 103-17-10.8	47	Market (KokMon)	landrace	fruits; harvested in Samrong
120	102			Tror Lach		Nov. 18	*Benincasa hispida*	Oddar Meanchey	Banteay Ompil	Kok Mon	14-9-44.7/ 103-17-10.8	47	Market (KokMon)	landrace	fruits; harvested in Siem Reap, no mature seeds
121	103	30062485	253146	Mates Sor	COL/CAMBODIA/2014/NIVTS/103	Nov. 18	*Capsicum frutescens*	Oddar Meanchey	Banteay Ompil	Chadeilo	14-7-48.0/ 103-10-5.5	70	Farmer's yard	landrace	fruits
122	104	30062486	253147	Mates Dai Neang	COL/CAMBODIA/2014/NIVTS/104	Nov. 18	*Capsicum annuum*	Oddar Meanchey			14-2-43.1/ 103-11-28.3	65		landrace	Dr. Lay Heng collected on 11/17
123	105	30062487	253148	Mates Ach Sath	COL/CAMBODIA/2014/NIVTS/105	Nov. 18	*Capsicum frutescens*	Battambang			13-13-81.8/ 102-26-53.8			landrace	Dr. Lay Heng collected on 11/18
124	106	30062488	253149	Mates	COL/CAMBODIA/2014/NIVTS/106	Nov. 18	*Capsicum frutescens*	Battambang			13-13-81.8/ 102-26-53.8			landrace	Dr. Lay Heng collected on 11/18

Photo 1. Typical vegetable market in Cambodia. This is a part of Samaki market, Pailin Province.

Photo 2. Typical vegetable market in Cambodia. This is a part of Samrong market, Oddar Meanchey Province.

Photo 3. 'Mates Dai Neang' in Leach market, Pursat Province.

Photo 4. 'Mates Ach Sath' (left) and 'Mates Dai Neang' (right) in Salakrav market, Pailin Province.

Photo 5. 'Mates Ach Sath' in Salakrav market, Pailin Province.

Photo 6. 'Mates Plok' (left) in Samrong market, Oddar Meanchey Province.

Photo 7. Condiment made by soaking chili pepper in vinegar.

Photo 8. Condiment made from paste of roasted chili pepper.

Photo 9. Various kinds of eggplants.

Photo 10. Typical eggplants in Cambodia.

Photo 11. Mature fruits of eggplant in Samaki market, Pailin Province.

Photo 12. Raw young fruits of eggplant. Eggplants are three fruits at the left edge of this picture. The green fruits in the middle are cucumber.

Photo 13. Melon seeds from accession No.17, subdivided on the basis of size. Upperleft = large seed (No. 17-1), Upper middle = slender seed (No.17-2), Upper right = small seed (No. 17-3).

Photo 14. Young fruit of cucumber, angled luffa, wax gourd and sponge gourd in Leach market, Pursat Province.

Photo 15. Cucumber cultivation in Oresey village, Oddar Meanchey Province

Photo 16. Melon seeds for the next season collected from 10 fruits at Bak Tra, Pursat (No. 17).

Photo 17. Seed from Thailand in Leach market, Pursat Province.

Photo 18. Melon cultivation of No. 98 seeds in Chheb village, Oddar Meanchey Province.

Photo 19. Variation in younger melon fruit and pickles made from melon fruit.

Photo 20. Mature melon fruits collected around Battambang Province.