

# Exploration and Collection of Vegetable Genetic Resources in Southeastern Cambodia

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## Summary

Cambodia is a diversity center for vegetables such as Cucurbitaceae, Fabaceae, Lamiaceae, and Solanaceae crops, which could be useful genetic resources for breeding programs. Here, we conducted a field exploration in Southeastern Cambodia to collect vegetable genetic resources based on their cultivation methods and characteristics. A total of 108 samples were collected at 42 new sites in 6 provinces, including 20 species from 9 families: Amaranthaceae, Apiaceae, Cucurbitaceae, Fabaceae, Lamiaceae, Malvaceae, Pedaliaceae, Poaceae, and Solanaceae. Chemical fertilizers, and insecticides were not frequently used for cultivation of vegetable landraces at neither these 42 sites, as well as those of previous explorations in northern, southern, eastern, and western Cambodia. Herbs such as basil, and leafy and fruit vegetables, such as eggplant, legumes, okra, and amaranth were cultivated at small-scale backyards near farmhouses without pesticides and used for daily cooking. Thus, rich genetic resources may be found in and around farmer homes.

KEY WORDS: Bean, Crop, Cucurbit, Diversity, Farmer, Herb

## Introduction

Genetic resources are important plant materials used to increase stable food yields and improve the quality of edible parts through breeding. They should be stored in national institutes and serve as common property with universal access. However, genetic resources are continuously decreasing as landraces are lost owing to land development for industrial areas and the introduction of improved varieties and cash crops. Cambodia, located near South Asia, is a center of diversity in vegetable crops expected to provide rich genetic resources. Especially in northern Cambodia, where is the border with Lao PDR and Thailand, many cultures and their goods are introduced through the border areas. These cultures and goods have become the foundation of the cultural formation of this region, and it is believed that the breath of that culture remains in the traditional crops. Several explorations have been conducted for collecting the genetic resources of

traditional crops in southern Cambodia (Tomooka *et al.* 2012, 2013; Sudasinghe *et al.* 2020, Matsunaga *et al.* 2018, Tanaka *et al.* 2019, Yon *et al.* 2022a, 2022b). New genetic resources have been introduced by each exploration, but it is expected that further exploration will lead to the collection of new genetic resources in southeastern Cambodia.

In this paper, we present the results of vegetable genetic resource exploration and collection activities conducted in northern Cambodia for 6 days, in the early December 2024.

## Methods

An exploration was successfully conducted with an annual specific Letter of Agreement signed by the Cambodian Agricultural Research and Development Institute (CARDI) and the Research Center of Genetic Resources in National Agriculture and Food Research Organization (NGRC) in 2024. This study was conducted

in six provinces of Southwestern Cambodia—Kandal, Kampong Cham, Kratie, Tbong Knom, Svay Rieng, and Prey Veng—and the capital city, Phnom Penh (Fig. 1 and Table 1). The exploration lasted 6 days, starting on

December 4, during the dry season (Photos 1 and 2).

The purpose, target, itinerary, and road condition of the exploration were overseen by research members under the CARDI Director general and Deputy director

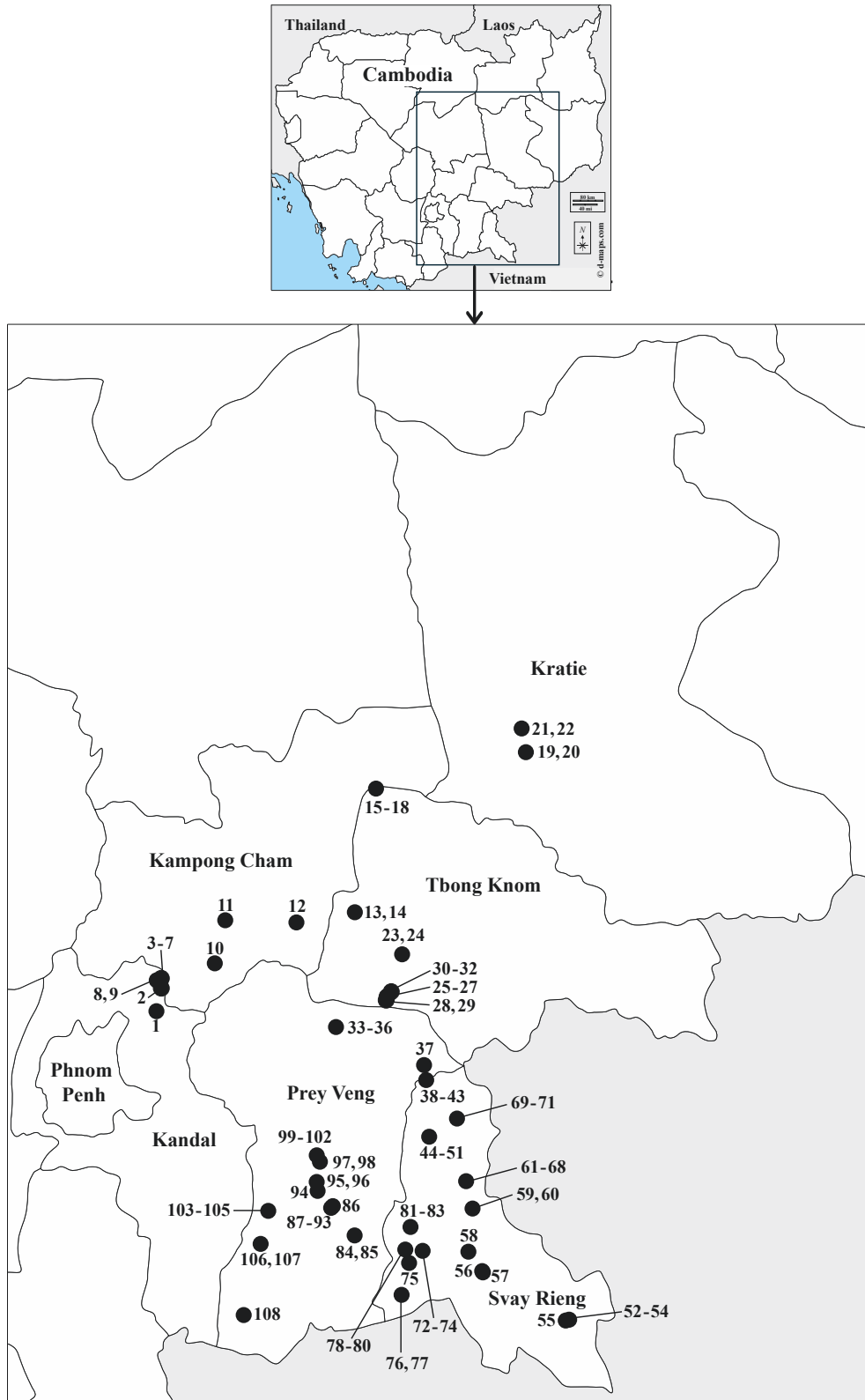


Fig. 1. A map of the collection sites in Southeastern Cambodia. Each collection site is indicated by a black circle with a corresponding accession number(s). Collection numbers “2024B01,” “2024B02,” “2024B03,” etc. are abbreviated as “1,” “2,” “3,” etc., respectively.

Table 1. Itinerary of the exploration collecting plant genetic resources in Southeastern Cambodia, 2024

Date (month/day)	Day	Itinerary <sup>1</sup>	Altitude (m)	Stay
12/4	Tue	Phnom Penh – Kandal (Kandal) – Kompong Cham (Kampong Cham)	10 – 20	Kampong Cham
12/5	Wed	Kampong Cham – Kratie (Kratie) – Tbong Knom (Tbong Knom)	0 – 53	Tbong Knom
12/6	Thu	Tbong Knom – Svay Rieng (Svay Rieng)	11 – 37	Svay Rieng
12/7	Fri	Svay Rieng	3 – 21	Svay Rieng
12/8	Sat	Svay Rieng – Prey Veng (Prey Veng)	-1 – 14	Prey Veng
12/9	Sun	Prey Veng – Phnom Penh	2 – 17	Phnom Penh

<sup>1</sup> Province name indicates in the parenthesis.



Photo 1. Dirt road in Anglong veng (Kampong Thom)



Photo 3. Group photo with the Deputy Director General (center) and travel members at the CARDI



Photo 2. Drying harvested rice under the sun, common seen at the villages (Kampong Thom)



Photo 4. Traffic in the morning (Phnom Penh)

general before its commencement (Photo 3). During the exploration in Southeastern Cambodia, the team met representatives of the Provincial Departments of Agriculture, Forestry and Fisheries as well as various village leaders from locations where samples were collected. The exploration included the border area with Vietnam at an altitude ranging from -1 to 53 m above sea level (Fig. 1 and Table 1). We drove through cities and villages on paved and dirt roads in a four-wheel drive vehicle (Photos 4 and 5).

We visited the houses, backyards, and fields of farmers, roadsides, vegetable stands, and public markets by vehicle and on foot (Photos 6 - 11). The precise positions of sites where samples were collected were recorded using Garmin ForeTrex 401 (Garmin



Photo 5. Across the river by boat to reach villages (Kampong Cham)

International Inc., USA). Information such as local crop names and cultivation methods (*e.g.*, cultivation place, sowing and harvest times, fertilizer application, and fruit



Photo 6. Reach farmers house by walking where car is unable to run (Kampong Cham)



Photo 9. A melon field (Kampong Chhnang)



Photo 7. Visiting Farmers house (Kampong Thom)



Photo 10. Indoor market (Kampong Chhnang)



Photo 8. Collecting Turkey berry at the backyard (Kampong Chhnang)



Photo 11. Outdoor market (Kampong Cham)

usage) was obtained by interviewing farmers (Photo 12). Seeds collected from either fruit, ear, pod, spikelet, and fruit, or a single plant were registered as a sample (Photos 13-16).

### Results and Discussion

A total of 108 samples were collected from 42 sites. These included 20 species from 9 families: Amaranthaceae, Apiaceae, Cucurbitaceae, Fabaceae, Lamiaceae, Malvaceae, Pedaliaceae, Poaceae, and Solanaceae (Table 2). The species comprised three amaranths (two were *Amaranthus viridis*, one was *Amaranthus* sp. [*Amaranthus viridis* & *Amaranthus* sp. were stored with mix]), five recaos (*Eryngium foetidum*



Photo 12. An interview to two farmers (Kampong Cham)

L.), five bitter gourds (*Momordica charantia* L.), eight melons (*Cucumis melo* L.), eight pumpkins (*Cucurbita*

Table 2. A summary of the genetic resources collected in Southeastern Cambodia, 2024

Family	Scientific name	Comone name	Number of samples							
			Total	Kandal	Kompong Cham	Kratie	Tbong Knom	Svay Rieng	Prey Veng	
Amaranthaceae	<i>Amaranthus</i> sp. <sup>1</sup>	Slender amaranth	3				1	2		
Apiaceae	<i>Eryngium foetidum</i>	Recao	5				1	2	2	
Cucurbitaceae	<i>Momordica charantia</i>	Bitter gourd	5	1					4	
	<i>Cucumis melo</i>	Melon	8	1					4	3
	<i>Cucurbita moschata</i>	Pumpkin	8	1		1	2	2	2	
	<i>Luffa cylindrica</i>	Sponge gourd	1						1	
	<i>Benincasa hispida</i>	Wax gourd	7					3	4	
Favaceae	<i>Lablab purpureus</i>	Hyacinth bean	1					1		
	<i>Vigna radiata</i>	Mung bean	1						1	
	<i>Vigna umbellata</i>	Rice bean	1					1		
	<i>Vigna unguiculata</i>	Cowpea	5					3	2	
Lamiaceae	<i>Ocimum basilicum</i>	Sweet basil	25	3	1	1	4	9	7	
	<i>Ocimum basilicum</i> var. <i>thrysiflora</i>	Thai basil	1					1		
	<i>Ocimum tenuiflorum</i>	Holy basil	19	2	2	1	4	5	5	
Malvaceae	<i>Abelmoschus esculentus</i>	Okra	6			1	1	1	3	
Pedaliaceae	<i>Sesamum indicum</i>	Sesame	2					1	1	
Poaceae	<i>Sorghum bicolor</i>	Sorghum	1				1			
Solanaceae	<i>Solanum melongena</i>	Egg plant	6				1	5		
	<i>Solanum torvum</i>	Turkey berry	3	1			1	1		
Total			108	9	3	4	16	46	30	

<sup>1</sup> Unidentified *Amaranthus* seeds stored in mixture with *A. viridis*.



Photo 13. Melon sample (the left fruit, JP 291946)



Photo 15. Eggplant sample (JP 291986)



Photo 14. Okra sample (JP291979)



Photo 16. Sweet basil sample (JP 291988)

*moschata* Duchesne ex Poir), one sponge gourd (*Luffa cylindrica* Mill.), seven wax gourds (*Benincasa hispida* Thunb.), one hyacinth bean (*Lablab purpureus* (L.) Sweet), one mung bean (*Vigna radiata* (L.) R. Wilczek), one rice bean (*V. umbellata* (Thunb.) Ohwi & H. Ohashi), five cowpeas (*Vigna unguiculata* (L.) Walpers cv-gr. *Unguiculata* E. Westphal), 25 sweet basils (*Ocimum basilicum* L.), one Thai basil (*Ocimum basilicum* var.

*thrysiflora* L.), 19 holy basils (*O. tenuiflorum* L.), six okras (*Abelmoschus esculentus* (L.) Moench), two sesame (*Sesamum indicum* L.), one sorghum (*Sorghum bicolor* (L.) Moench), six eggplants (*Solanum melongena* L.), and three Turkey berry (*Solanum torvum* Sw.) (Table 2). These 108 samples were collected from markets and storage facilities, backyards (gardens), and fields of farmers. All were collected at new sites and new genetic

resources for both the CARDI and NGRC.

Of 108 genetic resources, 35 were collected at farmhouses as seeds and consisted of Cucurbitaceae and Fabaceae crops, such as melon, pumpkin, sponge gourd, wax gourd, mung bean, rice bean, and cowpea. The seeds preserved in plastic PET bottles, plastic bags, plastic nets, or cloth in farmhouses (Photos 17 and 18), which preservation found in whole areas in Cambodia (e.g., Tanaka *et al.* 2016). Remaining 73 samples were collected at small-scale backyards (gardens) near farmhouses where leafy and fruit vegetables, herbs, and medicinal plants were cultivated without chemical fertilizer and without pesticides (Photos 19 and 20).

Information, including local crop names and cultivation methods, was collected by interviewing the farmers and were coincide with those of previous exploration in northern, eastern and southern Cambodia (e.g., Tanaka *et al.* 2016). Farmers were not frequently used chemical fertilizers and pesticide for vegetable cultivation of local varieties at the explored sites. Conversely, ash after slash-and-burn or organic compost were used as fertilizer. Chemical fertilizers and pesticide, as well as agricultural supplies for irrigation system and vertical cultivation system, were used for the cultivation of improved varieties introduced from foreign countries,

such as cabbage, bok choy, eggplant, cucumber, and so on (Photos 21 – 24). Local farmers seemed to expend little effort in the cultivation of vegetables for personal consumption. Field of cash crops, such as rubber tree, banana, cassava, cashew nut, etc., were also found at explored route.

### Conclusion

The genetic resources collected in this exploration were obtained from novel sites in southeastern Cambodia, where vegetables and herbs were cultivated in backyards, while cucurbits and legumes were stored in farmhouses. Through interviews, we obtained information on cultivation methods that were introduced in previous explorations of northern, eastern, and southern Cambodia. The collected data indicate that useful and rich genetic resources can be found in and around farmhouses in this region.

### Genetic resources

All seeds of the 108 samples collected were stored as genetic resources in the CARDI Genebank and divided into two subsets. One of the subsets was placed in the NARO Genebank with JP numbers under the Standard Material Transfer Agreement of the



Photo 17. Seeds preserved in plastic PET bottle (JPs 292045–292047)



Photo 19. Vegetable cultivation for daily consumption at the backyard (JP291957)



Photo 18. Melon seeds preserved in plastic bag (JP 292014)



Photo 20. Okra cultivation at the backyard (JP292044)



Photo 21. Cultivation of improved leafy vegetable variety (Kampong Chhnang)



Photo 23. Cultivation of improved cucumber variety (Prey Veng)



Photo 22. Cowpea cultivation with soil management and irrigation



Photo 24. Leafy vegetable cultivation with plastic net for preventing pests (Prey Veng)

International Treaty on Plant Genetic Resources for Food and Agriculture (Table 3). We plan to multiply the obtained genetic resources and evaluate them during the following year.

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### References

- Matsunaga H, Yokota M, Mat L and Sophany S (2018) Collaborative exploration of Solanaceae vegetable genetic resources in Southern Cambodia 2017. AREIPGR 34: 102–117. [Genebank, NARO], [JaLC]
- Sudasinghe SP, Mat L, Bando K, Yamaguchi K, Sakhan S, Ouk M and Matsushima K (2020) Collaborative exploration of plant genetic resources in Southern Cambodia, 2019. AREIPGR 36: 128–147. [Genebank, NARO], [JaLC]
- Tanaka K, Duong TT, Yamashita H, Lay Heng S, Sophany S and Kato K (2016) Collection of cucurbit crops (Cucurbitaceae) from Eastern Cambodia, 2015. AREIPGR 32: 109–137. [Genebank, NARO], [JaLC]

- Tanaka K, Shigita G, Dung TP, Sophea Y, Thun V, Sophany S and Kato K (2019) Collection of melon and other Cucurbitaceous crops in Cambodia in 2017. AREIPGR 35: 121–146.  
[Genebank, NARO], [JaLC]
- Tomooka N, Phal P, Lay-Heng S, Channa T and Makara O (2013) Collection and conservation of Leguminous crops and their wild relatives in Cambodia, 2012. AREIPGR 29: 135–159.  
[Genebank, NARO], [JaLC]
- Tomooka N, Ra T, Vathany T, Channa T and Makara O (2012) Collection and conservation of Leguminous crops and their wild relatives in Cambodia, 2011. AREIPGR 28: 125–137.  
[Genebank, NARO], [JaLC]
- Yon S, Ros D, Ouch S, Sakhan S, Thun V, Lor B, Tanaka K and Kawazu Y (2022a) Exploration and collection of plant genetic resources in southwestern Cambodia, 2022. AREIPGR 38: 84–102.  
[Genebank, NARO], [JaLC]
- Yon S, Tanaka K, Ouch S, Ros D, Sakhan S, Thun V, Lor B, Kawazu Y, Kato K (2022b) Exploration and collection of plant genetic resources in southern Cambodia, 2021. AREIPGR 38: 103–124.  
[Genebank, NARO], [JaLC]

# カンボジア南東部における野菜遺伝資源探索，2024 年

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## 和文摘要

カンボジアはウリ科，マメ科，シソ科，ナス科などの野菜の多様性中心の一つで，同国における作物遺伝資源は育種計画において有益な遺伝資源として活用できる．そこで，カンボジア南東部において遺伝資源探索を実施し，野菜遺伝資源とともにそれら遺伝資源の栽培方法や特性評価に関する情報も収集した．収集した遺伝資源はヒユ科，セリ科，ウリ科，マメ科，シソ科，ゴマ科，アオイ科，イネ科およびナス科に属する 20 種からなる 108 点であり，6 つの州にまたがる 42 の新規地点において収集できた．訪問地点における農家からの聞き取りにより，在来野菜の栽培において化学肥料や農薬が使われることがほとんどないことがわかった．バジルやオオバコエンドロといったハーブ類ならびナス，マメやアマランサスといった葉菜類および果菜類の野菜が料理に利用できるよう庭先において無農薬で栽培されていた．これらの状況は農家の家や庭において多種多様な遺伝資源を収集できる可能性を示していた．

Table 3. The genetic resources collected in Southeastern Cambodia in 2024

No.	Coll. No.	JP No.	Coll. date	Crop name	Scientific name	Local name	Province	District	Commune	Village	North Latitude & East Longitude	Altitude (m)	Plant status	Coll. method	Source
1	2024B1	291946	2024/12/4	Melon	<i>Cucumis melo</i>	Trosok Srov	Kandal	Mok Kompol	Prek amhijanh	Krom	N11-43-55 & E104-58-19	20	Landrace	Single fruit	Farmer
2	2024B2	291947	2024/12/4	Sweet basil	<i>Ocimum basilicum</i>	Mares Prov	Kandal	Ksach Kandal	Koh Chor ram	Krom	N11-48-47 & E105-0-50	10	Landrace	Bulk	Garden
3	2024B3	291948	2024/12/4	Bitter gourd	<i>Momordica charantia</i>	Mares Prey	Kandal	Ksach Kandal	Ta aek	Ta aek	N11-49-53 & E105-1-12	20	Wild	Bulk	Garden
4	2024B4	291949	2024/12/4	Sweet basil	<i>Ocimum basilicum</i>	Mares Prov	Kandal	Ksach Kandal	Ta aek	Ta aek	N11-49-53 & E105-1-12	20	Landrace	Bulk	Garden
5	2024B5	291950	2024/12/4	Holy basil	<i>Ocimum tenuiflorum</i>	Chi Neang Vong	Kandal	Ksach Kandal	Ta aek	Ta aek	N11-49-53 & E105-1-12	20	Landrace	Bulk	Garden
6	2024B6	291951	2024/12/4	Pumpkin	<i>Cucurbita moschata</i>	Lpov	Kandal	Ksach Kandal	Ta aek	Ta aek	N11-49-53 & E105-1-12	20	Landrace	Bulk	Farmer
7	2024B7	291952	2024/12/4	Turkey berry	<i>Solanum torvum</i>	Trob pich nhong	Kandal	Ksach Kandal	Ta aek	Ta aek	N11-49-53 & E105-1-12	20	Landrace	Bulk	Garden
8	2024B8	291953	2024/12/4	Sweet basil	<i>Ocimum basilicum</i>	Mares Prov	Kandal	Mukh Kom Poul	Prek domloong	Lor ot	N11-49-39 & E104-58-49	20	Landrace	Bulk	Garden
9	2024B9	291954	2024/12/4	Holy basil	<i>Ocimum tenuiflorum</i>	Chi Neang Vong	Kandal	Mukh Kom Poul	Prek domloong	Lor ot	N11-49-39 & E104-58-49	20	Landrace	Bulk	Garden
10	2024B10	291955	2024/12/4	Holy basil	<i>Ocimum tenuiflorum</i>	Chi Neang Vong	Kampong Cham	Kong Meas	Ror Ka Ar	Psa Prek Liv	N11-52-33 & E105-7-32	20	Landrace	Bulk	Garden
11	2024B11	291956	2024/12/4	Sweet basil	<i>Ocimum basilicum</i>	Mares Prov	Kampong Cham	Kong Meas	So Kong	Otn Long Ork Lik	N11-57-55 & E105-10-53	20	Landrace	Bulk	Garden
12	2024B12	291957	2024/12/4	Holy basil	<i>Ocimum tenuiflorum</i>	Chi Neang Vong	Kampong Cham	Kro Kor	Kro Kor	Kompong Kro Bey	N11-56-15 & E105-20-60	20	Landrace	Bulk	Garden
13	2024B13	291958	2024/12/5	Holy basil	<i>Ocimum tenuiflorum</i>	Chi Neang Vong	Tbong Knom	Tbong Kmom	Ji rol ti Mouy	Ji rol kanal	N12-1-22.2 & E105-30-1.5	53	Landrace	Bulk	Garden
14	2024B14	291959	2024/12/5	Pumpkin	<i>Cucurbita moschata</i>	Lpov	Tbong Knom	Tbong Kmom	Ji rol ti Mouy	Ji rol kanal	N12-1-22.2 & E105-30-1.5	53	Landrace	Bulk	Farmer
15	2024B15	291960	2024/12/5	Sweet basil	<i>Ocimum basilicum</i>	Mares Prov	Tbong Knom	Kroch Chma	Kroch Chma	Ksach Ches Krom	N12-17-13.1 & E105-34-48.0	0	Landrace	Bulk	Garden
16	2024B16	291961	2024/12/5	Pumpkin	<i>Cucurbita moschata</i>	Lpov	Tbong Knom	Kroch Chma	Kroch Chma	Ksach Ches Krom	N12-17-13.1 & E105-34-48.0	0	Landrace	Bulk	Farmer
17	2024B17	291962	2024/12/5	Holy basil	<i>Ocimum tenuiflorum</i>	Chi Neang Vong	Tbong Knom	Kroch Chma	Kroch Chma	Ksach Ches Krom	N12-17-13.1 & E105-34-48.0	0	Landrace	Bulk	Garden
18	2024B18	291963	2024/12/5	Slender amaranth	<i>Amaranthus viridis</i>	Pti Doung	Tbong Knom	Kroch Chma	Kroch Chma	Ksach Ches Krom	N12-17-13.1 & E105-34-48.0	0	Landrace	Bulk	Farmer
19	2024B19	291964	2024/12/5	Holy basil	<i>Ocimum tenuiflorum</i>	Chi Neang Vong	Kratie	Prek Pro Sob	Prek Pro Sob	Prek Pro Sob	N12-22-4.2 & E106-1-38.5	41	Landrace	Bulk	Garden
20	2024B20	291965	2024/12/5	Okra	<i>Abelmoschus esculentus</i>	Pot Pa rang	Kratie	Prek Pro Sob	Prek Pro Sob	Prek Pro Sob	N12-22-4.2 & E106-1-38.5	41	Landrace	Bulk	Garden
21	2024B21	291966	2024/12/5	Pumpkin	<i>Cucurbita moschata</i>	Lpov	Kratie	Prek Pro Sob	Prek Pro Sob	Imor reap	N12-24-42.7 & E106-1-8.3	42	Landrace	Bulk	Farmer
22	2024B22	291967	2024/12/5	Sweet basil	<i>Ocimum basilicum</i>	Mara Prov Kmao	Kratie	Prek Pro Sob	Prek Pro Sob	Imor reap	N12-24-42.7 & E106-1-8.3	42	Landrace	Bulk	Garden
23	2024B23	291968	2024/12/6	Okra	<i>Abelmoschus esculentus</i>	Pot Pa rang	Tbong Knom	Tbong kmom	Muong Reav	Tropang Snor	N11-53-44.0 & E105-38-34.1	24	Landrace	Three fruits	Garden

Table 3. (Continued).

No.	Coll. No.	JP No.	Coll. date	Crop name	Scientific name	Local name	Province	District	Commune	Village	North Latitude & East Longitude	Altitude (m)	Plant status	Coll. method	Source
24	2024B24	291969	2024/12/6	Sweet basil	<i>Ocimum basilicum</i>	Chi Neang Vong	Tbong Knom	Tbong kmom	Muong Reav	Tropang Snor	N11-53-44.0 & E105-38-34.1	24	Landrace	Bulk	Garden
25	2024B25	291970	2024/12/6	Holy basil	<i>Ocimum tenuiflorum</i>	Sandek bay	Tbong Knom	Ou Reang Ov	Chork	Chom Luk	N11-47-11.3 & E105-36-9.7	13	Landrace	Bulk	Garden
26	2024B26	291971	2024/12/6	Recao	<i>Eryngium foetidum</i>	Chi Rona	Tbong Knom	Ou Reang Ov	Chork	Chom Luk	N11-47-11.3 & E105-36-9.7	13	Landrace	Bulk	Garden
27	2024B27	291972	2024/12/6	Sorghum	<i>Sorghum bicolor</i>	NA	Tbong Knom	Ou Reang Ov	Chork	Chom Luk	N11-47-11.3 & E105-36-9.7	13	Landrace	Two spikes	Garden
28	2024B28	291973	2024/12/6	Sweet basil	<i>Ocimum basilicum</i>	Mares Prov	Tbong Knom	Ou Reang Ov	Chork	Pro Sat	N11-46-16.6 & E105-35-2.7	11	Landrace	Bulk	Garden
29	2024B29	291974	2024/12/6	Sweet basil	<i>Ocimum basilicum</i>	Mara Prov Kmao	Tbong Knom	Ou Reang Ov	Chork	Pro Sat	N11-46-16.6 & E105-35-2.7	11	Landrace	Bulk	Garden
30	2024B30	291975	2024/12/6	Holy basil	<i>Ocimum tenuiflorum</i>	Chi Neang Vong	Tbong Knom	Ou Reang Ov	Chork	Ou Lok	N11-45-24.8 & E105-34-56.1	17	Landrace	Bulk	Garden
31	2024B31	291976	2024/12/6	Eggplant	<i>Solanum melongena</i>	Trob Sruoy	Tbong Knom	Ou Reang Ov	Chork	Ou Lok	N11-45-24.8 & E105-34-56.1	17	Landrace	Three fruits	Garden
32	2024B32	291977	2024/12/6	Turkey berry	<i>Solanum torvum</i>	Trob pich nhong	Tbong Knom	Ou Reang Ov	Chork	Ou Lok	N11-45-24.8 & E105-34-56.1	17	Landrace	Bulk	Garden
33	2024B33	291978	2024/12/6	Wax gourd	<i>Benincasa hispida</i>	Tror Lak	Prey Veng	Kanhchreach	Kreung Reay	Sa Long	N11-41-52.1 & E105-26-49.4	37	Landrace	Bulk	Garden
34	2024B34	291979	2024/12/6	Okra	<i>Abelmoschus esculentus</i>	Pot Pa rang	Prey Veng	Kanhchreach	Kreung Reay	Sa Long	N11-41-52.1 & E105-26-49.4	37	Landrace	Bulk	Garden
35	2024B35	291980	2024/12/6	Holy basil	<i>Ocimum tenuiflorum</i>	Chi Neang Vong	Prey Veng	Kanhchreach	Kreung Reay	Sa Long	N11-41-52.1 & E105-26-49.4	37	Landrace	Bulk	Garden
36	2024B36	291981	2024/12/6	Sweet basil	<i>Ocimum basilicum</i>	Mares Prov	Prey Veng	Kanhchreach	Kreung Reay	Sa Long	N11-41-52.1 & E105-26-49.4	37	Landrace	Bulk	Garden
37	2024B37	291982	2024/12/6	Sweet basil	<i>Ocimum basilicum</i>	Mares Prov	Prey Veng	Komchay Mea	Kro Nhong	Kro Van	N11-34-44.1 & E105-41-32.1	22	Landrace	Bulk	Garden
38	2024B38	291983	2024/12/6	Melon	<i>Cucumis melo</i>	Trosok Srov	Svay Rieng	Rot Meas Haek	Orn Dong tro Baek	Tom Raeng	N11-33-13.9 & E105-42-27.3	31	Landrace	Bulk	Farmer
39	2024B39	291984	2024/12/6	Melon	<i>Cucumis melo</i>	Trosok Srov	Svay Rieng	Rot Meas Haek	Orn Dong tro Baek	Tom Raeng	N11-33-13.9 & E105-42-27.3	31	Landrace	Bulk	Farmer
40	2024B40	291985	2024/12/6	Eggplant	<i>Solanum melongena</i>	Trob Srov	Svay Rieng	Rot Meas Haek	Orn Dong tro Baek	Tom Raeng	N11-33-13.9 & E105-42-27.3	31	Landrace	Single fruit	Garden
41	2024B41	291986	2024/12/6	Eggplant	<i>Solanum melongena</i>	Trob Tro Keab	Svay Rieng	Rot Meas Haek	Orn Dong tro Baek	Tom Raeng	N11-33-13.9 & E105-42-27.3	31	Landrace	Single fruit	Garden
42	2024B42	291987	2024/12/6	Hyacinth bean	<i>Lablab purpureus</i>	Sondaek Khngae	Svay Rieng	Rot Meas Haek	Orn Dong tro Baek	Tom Raeng	N11-33-13.9 & E105-42-27.3	31	Landrace	Bulk	Garden
43	2024B43	291988	2024/12/6	Sweet basil	<i>Ocimum basilicum</i>	Mares Prov	Svay Rieng	Rot Meas Haek	Orn Dong tro Baek	Tom Raeng	N11-33-13.9 & E105-42-27.3	31	Landrace	Bulk	Garden
44	2024B44	291989	2024/12/6	Melon	<i>Cucumis melo</i>	Trosok Srov	Svay Rieng	Ror Meas Haek	Chley	Tro Pang Plos	N11-24-19.3 & E105-42-59.9	28	Landrace	Bulk	Farmer
45	2024B45	291990	2024/12/6	Eggplant	<i>Solanum melongena</i>	Trob Sor	Svay Rieng	Ror Meas Haek	Chley	Tro Pang Plos	N11-24-19.3 & E105-42-59.9	28	Landrace	Bulk	Garden
46	2024B46	291991	2024/12/6	Slender amaranth	<i>Amaranthus viridis</i>	Pti Sor	Svay Rieng	Ror Meas Haek	Chley	Tro Pang Plos	N11-24-19.3 & E105-42-59.9	28	Landrace	Bulk	Farmer

Table 3. (Continued).

No.	Coll. No.	JP No.	Coll. date	Crop name	Scientific name	Local name	Province	District	Commune	Village	North Latitude & East Longitude	Altitude (m)	Plant status	Coll. method	Source
47	2024B47	291992	2024/12/6	Sponge gourd	<i>Luffa cylindrica</i>	Nor nong	Svay Rieng	Ror Meas Haek	Chley	Tro Pang Plos	N11-24-19.3 & E105-42-59.9	28	Landrace	Bulk	Farmer
48	2024B48	291993	2024/12/6	Wax gourd	<i>Benincasa hispida</i>	Tror Lak	Svay Rieng	Ror Meas Haek	Chley	Tro Pang Plos	N11-24-19.3 & E105-42-59.9	28	Landrace	Bulk	Farmer
49	2024B49	291994	2024/12/6	Cowpea	<i>Vigna unguiculata</i>	Sandek Kuor	Svay Rieng	Ror Meas Haek	Chley	Tro Pang Plos	N11-24-19.3 & E105-42-59.9	28	Landrace	Bulk	Farmer
50	2024B50	291995	2024/12/6	Okra	<i>Abelmoschus esculentus</i>	Pot Pa rang	Svay Rieng	Ror Meas Haek	Chley	Tro Pang Plos	N11-24-19.3 & E105-42-59.9	28	Landrace	Single fruit	Garden
51	2024B51	291996	2024/12/6	Sesame	<i>Sesamum indicum</i>	Lngor	Svay Rieng	Ror Meas Haek	Chley	Tro Pang Plos	N11-24-19.3 & E105-42-59.9	28	Landrace	Bulk	Farmer
52	2024B52	291997	2024/12/7	Bitter gourd	<i>Momordica charantia</i>	Mares Prey	Svay Rieng	Chan Frea	Me Sar Thngak	Por	N10-58-57.4 & E106-7-34.5	3	Wild	Bulk	Garden
53	2024B53	291998	2024/12/7	Sweet basil	<i>Ocimum basilicum</i>	Mares Prov	Svay Rieng	Chan Frea	Me Sar Thngak	Por	N10-58-57.4 & E106-7-34.5	3	Landrace	Bulk	Garden
54	2024B54	291999	2024/12/7	Holy basil	<i>Ocimum tenuiflorum</i>	Chi Neang Vong	Svay Rieng	Chan Frea	Me Sar Thngak	Por	N10-58-57.4 & E106-7-34.5	3	Landrace	Bulk	Garden
55	2024B55	292000	2024/12/7	Bitter gourd	<i>Momordica charantia</i>	Mares Prey	Svay Rieng	Chantrea	Me Sar Thngak	Ta Daev	N10-58-2.5 & E106-7-27.7	4	Wild	Bulk	Garden
56	2024B56	292001	2024/12/7	Bitter gourd	<i>Momordica charantia</i>	Mares Prey	Svay Rieng	Svay Teap	Ror Mang Thkor	Kro Nhong	N11-6-19.5 & E105-51-55.0	21	Wild	Bulk	Garden
57	2024B57	292002	2024/12/7	Thai basil	<i>Ocimum basilicum</i> var. <i>thyrsoiflora</i>	Mares Prov Kroöb	Svay Rieng	Svay Teap	Ror Mang Thkor	Kro Nhong	N11-6-17.9 & E105-52-4.6	11	Landrace	Bulk	Garden
58	2024B58	292003	2024/12/7	Recao	<i>Eryngium foetidum</i>	Chi Rona	Svay Rieng	Romdoul	Kompong Chork	Chom Bork Kong	N11-9-12.5 & E105-50-29.3	13	Landrace	Bulk	Garden
59	2024B59	292004	2024/12/7	Cowpea	<i>Vigna unguiculata</i>	Sandek Kuor	Svay Rieng	Romdoul	Bous Morn	Sro Mor	N11-14-7.3 & E105-50-45.2	13	Landrace	Bulk	Farmer
60	2024B60	292005	2024/12/7	Holy basil	<i>Ocimum tenuiflorum</i>	Chi Neang Vong	Svay Rieng	Romdoul	Bous Morn	Sro Mor	N11-14-7.3 & E105-50-45.2	13	Landrace	Bulk	Garden
61	2024B61	292006	2024/12/7	Rice bean	<i>Vigna umbellata</i>	Sandek Ach Kondol	Svay Rieng	Ror Meas Haek	Ang Pro Srae	Somrong	N11-18-2.2 & E105-49-59.4	5	Landrace	Bulk	Farmer
62	2024B62	292007	2024/12/7	Pumpkin	<i>Cucurbita moschata</i>	Lpov Kingkork	Svay Rieng	Ror Meas Haek	Ang Pro Srae	Somrong	N11-18-2.2 & E105-49-59.4	5	Landrace	Bulk	Farmer
63	2024B63	292008	2024/12/7	Pumpkin	<i>Cucurbita moschata</i>	Lpov Trou	Svay Rieng	Ror Meas Haek	Ang Pro Srae	Somrong	N11-18-2.2 & E105-49-59.4	5	Wild	Bulk	Farmer
64	2024B64	292009	2024/12/7	Wax gourd	<i>Benincasa hispida</i>	Tror Lak	Svay Rieng	Ror Meas Haek	Ang Pro Srae	Somrong	N11-18-2.2 & E105-49-59.4	5	Landrace	Bulk	Farmer
65	2024B65	292010	2024/12/7	Bitter gourd	<i>Momordica charantia</i>	Morea	Svay Rieng	Ror Meas Haek	Ang Pro Srae	Somrong	N11-18-2.2 & E105-49-59.4	5	Landrace	Bulk	Garden
66	2024B66	292011	2024/12/7	Wax gourd	<i>Benincasa hispida</i>	Tror Lak	Svay Rieng	Ror Meas Haek	Ang Pro Srae	Somrong	N11-18-2.2 & E105-49-59.4	5	Landrace	Bulk	Farmer
67	2024B67	292012	2024/12/7	Amaranth	<i>Amaranthus viridis</i> & <i>Amaranthus</i> sp.	Pti Sor & Pti Beytong	Svay Rieng	Ror Meas Haek	Ang Pro Srae	Somrong	N11-18-2.2 & E105-49-59.4	5	Landrace	Bulk	Farmer
68	2024B68	292013	2024/12/7	Sweet basil	<i>Ocimum basilicum</i>	Mares Prov	Svay Rieng	Ror Meas Haek	Ang Pro Srae	Somrong	N11-18-2.2 & E105-49-59.4	5	Landrace	Bulk	Garden
69	2024B69	292014	2024/12/7	Melon	<i>Cucumis melo</i>	Trosok Srov	Svay Rieng	Ror Meas Haek	Ampil	Tro Pang Prey	N11-26-13.3 & E105-48-16.1	12	Landrace	Bulk	Farmer

Table 3. (Continued).

No.	Coll. No.	JP No.	Coll. date	Crop name	Scientific name	Local name	Province	District	Commune	Village	North Latitude & East Longitude	Altitude (m)	Plant status	Coll. method	Source
70	2024B70	292015	2024/12/7	Eggplant	<i>Solanum melongena</i>	Trob Veng (Sor)	Svay Rieng	Ror Meas Haek	Ampil	Tro Pang Prey	N11-26-13.3 & E105-48-16.1	12	Landrace	Bulk	Garden
71	2024B71	292016	2024/12/7	Sweet basil	<i>Ocimum basilicum</i>	Mares Prov	Svay Rieng	Ror Meas Haek	Ampil	Tro Pang Prey	N11-26-13.3 & E105-48-16.1	12	Landrace	Single fruit	Garden
72	2024B72	292017	2024/12/8	Sweet basil	<i>Ocimum basilicum</i>	Mares Prov	Svay Rieng	Svay Jrom	Pring	Svay Pro hout	N11-9-34.4 & E105-41-24.3	-1	Landrace	Bulk	Garden
73	2024B73	292018	2024/12/8	Holy basil	<i>Ocimum tenuiflorum</i>	Chi Neang Vong	Svay Rieng	Svay Jrom	Pring	Svay Pro hout	N11-9-34.4 & E105-41-24.3	-1	Landrace	Bulk	Garden
74	2024B74	292019	2024/12/8	Turkey berry	<i>Solanum torvum</i>	Trob pich nhong	Svay Rieng	Svay Jrom	Pring	Svay Pro hout	N11-9-34.4 & E105-41-24.3	-1	Landrace	Bulk	Garden
75	2024B75	292020	2024/12/8	Sweet basil	<i>Ocimum basilicum</i>	Mares Prov	Svay Rieng	Svay Chrom	Chher Tea	Rom Denh	N11-7-25.8 & E105-38-18.9	1	Landrace	Bulk	Garden
76	2024B76	292021	2024/12/8	Holy basil	<i>Ocimum tenuiflorum</i>	Chi Neang Vong	Svay Rieng	Svay Chrom	Svay Thum	Svay Chek	N11-4-7.9 & E105-37-17.8	12	Landrace	Bulk	Garden
77	2024B77	292022	2024/12/8	Sweet basil	<i>Ocimum basilicum</i>	Mares Prov	Svay Rieng	Svay Chrom	Svay Thum	Svay Chek	N11-4-7.9 & E105-37-17.8	12	Landrace	Bulk	Garden
78	2024B78	292023	2024/12/8	Recao	<i>Eryngium foetidum</i>	Chi Rona	Svay Rieng	Svay Jrom	Krou Kou	Prey Kla	N11-9-59.7 & E105-37-21.8	14	Landrace	Bulk	Garden
79	2024B79	292024	2024/12/8	Holy basil	<i>Ocimum tenuiflorum</i>	Chi Neang Vong	Svay Rieng	Svay Jrom	Krou Kou	Prey Kla	N11-9-59.7 & E105-37-21.8	14	Landrace	Bulk	Garden
80	2024B80	292025	2024/12/8	Cowpea	<i>Vigna unguiculata</i>	Sandek Kuor	Svay Rieng	Svay Jrom	Krou Kou	Prey Kla	N11-9-59.7 & E105-37-21.8	14	Landrace	Bulk	Farmer
81	2024B81	292026	2024/12/8	Sweet basil	<i>Ocimum basilicum</i>	Mares Prov	Svay Rieng	Svay Teap	Koul	Koul	N11-11-43.4 & E105-39-40.8	8	Landrace	Bulk	Garden
82	2024B82	292027	2024/12/8	Sweet basil	<i>Ocimum basilicum</i>	Mara Prov Kmao	Svay Rieng	Svay Teap	Koul	Koul	N11-11-43.4 & E105-39-40.8	8	Landrace	Bulk	Garden
83	2024B83	292028	2024/12/8	Eggplant	<i>Solanum melongena</i>	Trob Sruoy	Svay Rieng	Svay Teap	Koul	Koul	N11-11-43.4 & E105-39-40.8	8	Landrace	Bulk	Garden
84	2024B84	292029	2024/12/8	Sweet basil	<i>Ocimum basilicum</i>	Mares Prov	Prey Veng	Kompong Traback	Konsorm Ork	Krouch	N11-11-33.7 & E105-30-4.9	11	Landrace	Bulk	Garden
85	2024B85	292030	2024/12/8	Melon	<i>Cucumis melo</i>	Trosok Srov	Prey Veng	Kompong Traback	Konsorm Ork	Krouch	N11-11-33.7 & E105-30-4.9	11	Landrace	Two fruits	Farmer
86	2024B86	292031	2024/12/8	Cowpea	<i>Vigna unguiculata</i>	Sandek Kuor	Prey Veng	Bar Phnom	Chher karch	Kandal	N11-14-36.5 & E105-26-7.7	8	Cultivar	Bulk	Farmer
87	2024B87	292032	2024/12/8	Okra	<i>Abelmoschus esculentus</i>	Pot Pa rang	Prey Veng	Bar Phnom	Chher Karch	Beung Pro Srae	N11-13-42.4 & E105-25-44.8	12	Landrace	Bulk	Garden
88	2024B88	292033	2024/12/8	Mung bean	<i>Vigna radiata</i>	Sandek bay	Prey Veng	Bar Phnom	Chher Karch	Beung Pro Srae	N11-13-42.4 & E105-25-44.8	12	Landrace	Bulk	Farmer
89	2024B89	292034	2024/12/8	Wax gourd	<i>Benincasa hispida</i>	Tror Lak	Prey Veng	Bar Phnom	Chher Karch	Beung Pro Srae	N11-13-42.4 & E105-25-44.8	12	Landrace	Bulk	Farmer
90	2024B90	292035	2024/12/8	Pumpkin	<i>Cucurbita moschata</i>	Lpov	Prey Veng	Bar Phnom	Chher Karch	Beung Pro Srae	N11-13-42.4 & E105-25-44.8	12	Landrace	Bulk	Farmer
91	2024B91	292036	2024/12/8	Melon	<i>Cucumis melo</i>	Trosok Srov	Prey Veng	Bar Phnom	Chher Karch	Beung Pro Srae	N11-13-42.4 & E105-25-44.8	12	Landrace	One fruit	Farmer
92	2024B92	292037	2024/12/8	Sesame	<i>Sesamum indicum</i>	Lngor	Prey Veng	Bar Phnom	Chher Karch	Beung Pro Srae	N11-13-42.4 & E105-25-44.8	12	Landrace	Bulk	Farmer

Table 3. (Continued).

No.	Coll. No.	JP No.	Coll. date	Crop name	Scientific name	Local name	Province	District	Commune	Village	North Latitude & East Longitude	Altitude (m)	Plant status	Coll. method	Source
93	2024B93	292038	2024/12/8	Wax gourd	<i>Benincasa hispida</i>	Tror Lak	Prey Veng	Bar Phnom	Chher Karch	Beung Pro Srae	N11-13-42.4 & E105-25-44.8	12	Landrace	Bulk	Farmer
94	2024B94	292039	2024/12/9	Wax gourd	<i>Benincasa hispida</i>	Tror Lak	Prey Veng	Ba Phnum	Roung Dom Rei	Kdey Doung	N11-17-16.3 & E105-24-11.1	15	Landrace	Bulk	Farmer
95	2024B95	292040	2024/12/9	Holy basil	<i>Ocimum tenuiflorum</i>	Chi Neang Vong	Prey Veng	Ba Phnum	Roung Dom Rei	Kdey Doung	N11-17-50.9 & E105-23-42.4	11	Landrace	Bulk	Garden
96	2024B96	292041	2024/12/9	Sweet basil	<i>Ocimum basilicum</i>	Mares Prov	Prey Veng	Ba Phnum	Roung Dom Rei	Kdey Doung	N11-17-50.9 & E105-23-42.4	11	Landrace	Bulk	Garden
97	2024B97	292042	2024/12/9	Holy basil	<i>Ocimum tenuiflorum</i>	Chi Neang Vong	Prey Veng	Ba Phnum	Theay	Lva	N11-20-48.1 & E105-24-35.8	17	Landrace	Bulk	Garden
98	2024B98	292043	2024/12/9	Recao	<i>Eryngium foetidum</i>	Chi Rona	Prey Veng	Ba Phnum	Theay	Lva	N11-20-48.1 & E105-24-35.8	17	Landrace	Bulk	Garden
99	2024B99	292044	2024/12/9	Okra	<i>Abelmoschus esculentus</i>	Pot Pa rang	Prey Veng	Ba Phnum	Theay	Snuo	N11-21-49.2 & E105-24-40.2	13	Landrace	Bulk	Garden
100	2024B100	292045	2024/12/9	Melon	<i>Cucumis melo</i>	Trosok Srov	Prey Veng	Ba Phnum	Theay	Snuo	N11-21-49.2 & E105-24-40.2	13	Landrace	Single fruit	Farmer
101	2024B101	292046	2024/12/9	Cowpea	<i>Vigna unguiculata</i>	Sandek Kuor	Prey Veng	Ba Phnum	Theay	Snuo	N11-21-49.2 & E105-24-40.2	13	Landrace	Bulk	Farmer
102	2024B102	292047	2024/12/9	Pumpkin	<i>Cucurbita moschata</i>	Lpov	Prey Veng	Ba Phnum	Theay	Snuo	N11-21-49.2 & E105-24-40.2	13	Landrace	Bulk	Farmer
103	2024B103	292048	2024/12/9	Recao	<i>Eryngium foetidum</i>	Chi Rona	Prey Veng	Peam Ror	Nak Leung	Nak Leung	N11-14-37.9 & E105-17-1.1	12	Landrace	Bulk	Garden
104	2024B104	292049	2024/12/9	Sweet basil	<i>Ocimum basilicum</i>	Mara Prov Kmao	Prey Veng	Peam Ror	Nak Leung	Nak Leung	N11-14-37.9 & E105-17-1.1	12	Landrace	Bulk	Garden
105	2024B105	292050	2024/12/9	Holy basil	<i>Ocimum tenuiflorum</i>	Chi Neang Vong	Prey Veng	Peam Ror	Nak Leung	Nak Leung	N11-14-37.9 & E105-17-1.1	12	Landrace	Bulk	Garden
106	2024B106	292051	2024/12/9	Sweet basil	<i>Ocimum basilicum</i>	Mares Prov	Prey Veng	Peam Chhor	Svay Phlos	SongKruos	N11-10-38.9 & E105-15-31.5	2	Landrace	Bulk	Garden
107	2024B107	292052	2024/12/9	Holy basil	<i>Ocimum tenuiflorum</i>	Chi Neang Vong	Prey Veng	Peam Chhor	Svay Phlos	SongKruos	N11-10-38.9 & E105-15-31.5	2	Landrace	Bulk	Garden
108	2024B108	292053	2024/12/9	Sweet basil	<i>Ocimum basilicum</i>	Mares Prov	Prey Veng	Peam Chhor	Prek Sombuor	Khporb	N11-1-39.7 & E105-12-19.0	11	Landrace	Bulk	Garden