Table S1. **Information of pepper germplasm used in this study.**

Serial number	ID	Introduction codename	Type	Serial number	ID	Introduction codename	Type
1	04Ca227	ZhenQing 108B	var. *longum* Bailey	79	07Y-54	No.54	var. *longum* Bailey
2	04Ca228	TianYu No.3	var.*fasciculatum* Bailey	80	07Y-55	No.55	var. *longum* Bailey
3	04Ca229	TianSheng	var.*fasciculatum* Bailey	81	07Y-56	No.56	var. *longum* Bailey
4	04Ca230	Plamena	var. *longum* Bailey	82	07Y-58	No.58	var. *longum* Bailey
5	04Ca231	Amfora	var. *longum* Bailey	83	07Y-59	No.59	var. *longum* Bailey
6	04Ca232	Una	var. *longum* Bailey	84	07Y-60	No.60	var. *grossum* Bailey
7	04Ca233	Romana	var. *longum* Bailey	85	07Y-61	No.61	var. *longum* Bailey
8	04Ca234	Feferona zuta	var. *longum* Bailey	86	07Y-63	No.63	var. *longum* Bailey
9	04Ca235	krusnica	var. *longum* Bailey	87	07Y-64	No.64	var. *longum* Bailey
10	04Ca236	Palanacka kapija	var. *longum* Bailey	88	07Y-65	No.65	var.*fasciculatu*m Bailey
11	04Ca237	Palanacko cudo	var.*fasciculatum* Bailey	89	07Y-66	No.66	var. *longum* Bailey
12	04Ca238	Zupska rana	var. *longum* Bailey	90	07Y-67	No.67	var. *longum* Bailey
13	04Ca239	PARACINKA	var.*fasciculatum* Bailey	91	07Y-68	No.68	var. *longum* Bailey
14	04Ca240	s1	var. *longum* Bailey	92	07Y-69	No.69	var. *longum* Bailey
15	04Ca241	s2	var. *longum* Bailey	93	07Y-70	No.70	var. *longum* Bailey
16	04Ca242	s3	var. *longum* Bailey	94	07Y-76	No.76	var. *longum* Bailey
17	04Ca243	s4	var. *longum* Bailey	95	07Y-77	No.77	var. *longum* Bailey
18	04Ca244	s5	var. *longum* Bailey	96	07Y-78	No.78	var. *longum* Bailey
19	04Ca245	s6	var. *longum* Bailey	97	07Y-79	No.79	var. *longum* Bailey
20	04Ca246	s7	var. *longum* Bailey	98	07Y-80	No.80	var. *longum* Bailey
21	04Ca247	s8	var. *longum*	99	07Y-81	No.81	var. *longum*

			Bailey				Bailey
22	04Ca248	s9	var. *longum* Bailey	100	07Y-82	No.82	var. *longum* Bailey
23	04Ca249	s10	var. *longum* Bailey	101	07Y-83	No.83	var. *longum* Bailey
24	04Ca250	s11	var. *longum* Bailey	102	07Y-84	No.84	var. *longum* Bailey
25	04Ca251	s12	var. *longum* Bailey	103	07Y-85	No.85	var.*fasciculatum* Bailey
26	04Ca252	s13	var. *longum* Bailey	104	07Y-86	No.86	var.*fasciculatum* Bailey
27	04Ca253	s14	var. *longum* Bailey	105	07Y-87	No.87	var. *longum* Bailey
28	04Ca254	s15	var. *longum* Bailey	106	07Y-90	No.90	var. *grossum* Bailey
29	04Ca255	s16	var. *longum* Bailey	107	07Y-92	No.92	var. *grossum* Bailey
30	04Ca256	s17	var. *longum* Bailey	108	07Y-93	No.93	var. *grossum* Bailey
31	04Ca257	s18	var. *longum* Bailey	109	07Y-94	No.94	var. *grossum* Bailey
32	04Ca258	s19	var. *longum* Bailey	110	07Y-95	No.95	var. *longum* Bailey
33	04Ca259	s20	var. *longum* Bailey	111	07Y-97	No.97	var. *longum* Bailey
34	04Ca260	s21	var. *longum* Bailey	112	07Y-98	No.98	var. *longum* Bailey
35	07Y-1	No.1	var. *longum* Bailey	113	07Y-99	No.99	var. *longum* Bailey
36	07Y-2	No.2	var. *longum* Bailey	114	07Y-100	No.100	var. *longum* Bailey
37	07Y-3	No.3	var. *longum* Bailey	115	07Y-101	No.101	var. *longum* Bailey
38	07Y-4	No.4	var. *longum* Bailey	116	07Y-103	No.103	var. *longum* Bailey
39	07Y-7	No.7	var. *longum* Bailey	117	07Y-104	No.104	var. *longum* Bailey
40	07Y-9	No.9	var. *longum* Bailey	118	07Y-105	No.105	var. *longum* Bailey
41	07Y-10	No.10	var.*fasciculatum* Bailey	119	07Y-109	chilli-M.I.2	var. *longum* Bailey
42	07Y-11	No.11	var. *longum* Bailey	120	07Y-113	5245	var. *conoides* Bailey
43	07Y-12	No.12	var. *longum*	121	07Y-116	A	var. *grossum*

			Bailey				Bailey
44	07Y-13	No.13	var. *longum* Bailey	122	07Y-117	B	var. *longum* Bailey
45	07Y-14	No.14	var. *longum* Bailey	123	07Y-118	C	var. *longum* Bailey
46	07Y-15	No.15	var.*fasciculatum* Bailey	124	07Y-119	D1	var. *longum* Bailey
47	07Y-16	No.16	var. *longum* Bailey	125	07Y-120	D2	var. *grossum* Bailey
48	07Y-17	No.17	var. *longum* Bailey	126	07Y-121	D3	var. *grossum* Bailey
49	07Y-18	No.18	var. *longum* Bailey	127	07Y-122	E	var. *longum* Bailey
50	07Y-19	No.19	var. *longum* Bailey	128	07Y-123	F	var. *longum* Bailey
51	07Y-21	No.21	var. *longum* Bailey	129	07Y-124	G	var. *longum* Bailey
52	07Y-23	No.23	var. *longum* Bailey	130	L504M	C. *Chinense* 12-13	var. *longum* Bailey
53	07Y-25	No.25	var. *longum* Bailey	131	LX4M	C. *Chinense* 12-13	var.*cerasiorme* Bailey
54	07Y-26	No.26	var. *longum* Bailey	132	L262M	C. *Chinense* 11-12	var.*cerasiorme* Bailey
55	07Y-27	No.27	var. *longum* Bailey	133		No.7 1-3U	var.*cerasiorme* Bailey
56	07Y-28	No.28	var. *longum* Bailey	134		ReLa No.2 F2	var. *grossum* Bailey
57	07Y-29	No.29	var. *longum* Bailey	135		New Plant Varieties 404 Large Fruit HB-2	var. *grossum* Bailey
58	07Y-30	No.30	var. *longum* Bailey	136		GLHB-8 Pod Pepper	var. *longum* Bailey
59	07Y-31	No.31	var. *longum* Bailey	137		Ghost Pepper type B	var. *conoides* Bailey
60	07Y-32	No.32	var. *longum* Bailey	138		GuiJiaoWang	var. *conoides* Bailey
61	07Y-33	No.33	var. *longum* Bailey	139		CanHong Pod Pepper	var. *conoides* Bailey
62	07Y-34	No.34	var. *longum* Bailey	140		GLHB-7 Pod Pepper	var. *conoides* Bailey
63	07Y-35-2	No.35	var. *longum* Bailey	141		No.9 sarrno 1-2	var. *conoides* Bailey
64	07Y-36	No.36	var. *longum*	142		HaiNan	var. *longum*

			Bailey		Yellow Lantern Pepper	Bailey
65	07Y-38	No.38	var. *longum* Bailey	143	No.4	var. *grossum* Bailey
66	07Y-39	No.39	var. *longum* Bailey	144	Thailand Pod Pepper	var. *grossum* Bailey
67	07Y-40	No.40	var. *longum* Bailey	145	HuaSheng PL-09	var. *conoides* Bailey
68	07Y-41	No.41	var. *longum* Bailey	146	HuaSheng 8736	var. *conoides* Bailey
69	07Y-42	No.42	var. *longum* Bailey	147	HuaSheng 1698	var. *conoides* Bailey
70	07Y-44	No.44	var. *longum* Bailey	148	ReLa No.4 Line Pepper	var. *conoides* Bailey
71	07Y-45	No.45	var. *longum* Bailey	149	HuangTan	var. *longum* Bailey
72	07Y-46	No.46	var. *longum* Bailey	150	YanHui Large Fruit Sweet Pepper	var. *grossum* Bailey
73	07Y-47-2	No.47	var. *longum* Bailey	151	YanHui Pod Pepper	var. *conoides* Bailey
74	07Y-48	No.48	var. *longum* Bailey	152	Pepper 505	var. *longum* Bailey
75	07Y-49	No.49	var. *longum* Bailey	153	Sweet Pepper $12C_7$	var. *grossum* Bailey
76	07Y-50	No.50	var. *longum* Bailey	154	Sweet Pepper $13C_{13}$	var. *grossum* Bailey
77	07Y-52	No.52	var. *longum* Bailey	155	Shuanshuan Pepper	var. *grossum* Bailey
78	07Y-53	No.53	var. *longum* Bailey			

Note: Source of germplasm resources: 1: From South Korea; 2-3: From China; 4-34: From the FRY; 35-118: From the Saint Nice Germplasm Bank; 119: From Sri Lanka; 120-129: From China; 130-132: From South America; 133-155: From China.

Classification: Bailey Taxonomy (Bailey, 1923).

Table S2. **Assignment of values for quality traits in pepper germplasm resources.**

Traits	Classification and valuation								
	1	2	3	4	5	6	7	8	9
Stem color	Green	Green with purple stripes	Purple	Others					
Shorter internodes of the lower part in plant	No								Yes
Development of the bud			Few/<2		middle/2-10		More/>10		
Leaf shape	Lanceolate	Oval shape	Broadly oval						
Leaf color	Light Green		Green		Dark Green		Purple		Others
Flower morphology			Down		Middle		Up		
The morphology of tidbits			Down		Middle		Up		
Fruit shape	Lichen	Round	Heart-shaped	Square	Rectangle	Irregular shape	Angular		
The morphology of fruit		Up		Hybrid		Down			
Color of green mature fruit	White	Yellow	Light Green	Green	Dark Green	Purple			
Color of mature fruit	White	Yellow	Orange	Red	Brown	Others			
Fruit surface texture	Smooth	Slightly wrinkled	Extremely wrinkled						

Table S3. **Construction of core germplasm.**

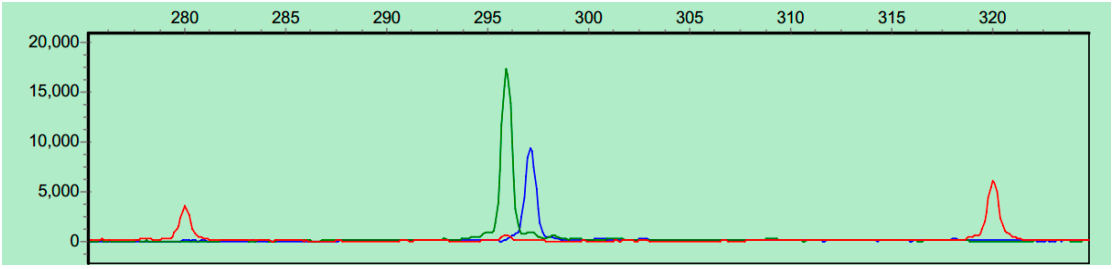
Experimental number E.N.	Temporary code for Mid-term repository T.C.	Introduction code for Mid-term repository I.C.	bailey 1923	Source
2	04Ca228	TianYu No.3	var.*fasciculatum* Bailey	China
3	04Ca229	TianSheng	var.*fasciculatum* Bailey	
6	04Ca232	Una	var.*longum* Bailey	The Southern Alliance
7	04Ca233	Romana	var.*longum* Bailey	
11	04Ca237	Palanacko cudo	var.*fasciculatum* Bailey	
12	04Ca238	Zupska rana	var.*longum* Bailey	
17	04Ca243	s4	var.*longum* Bailey	
18	04Ca244	s5	var.*longum* Bailey	
21	04Ca247	s8	var.*longum* Bailey	
31	04Ca257	s18	var.*longum* Bailey	
35	07Y-1	No.1	var.*longum* Bailey	Seminis germplasm bank
44	07Y-13	No.13	var.*longum* Bailey	
55	07Y-27	No.27	var.*longum* Bailey	
88	07Y-65	No.65	var.*fasciculatum* Bailey	
90	07Y-67	No.67	var.*longum* Bailey	
95	07Y-77	No.77	var.*longum* Bailey	
97	07Y-79	No.79	var.*longum* Bailey	
101	07Y-83	No.83	var.*longum* Bailey	
105	07Y-87	No.87	var.*longum* Bailey	
110	07Y-95	No.95	var.*longum* Bailey	
114	07Y-100	No.100	var.*longum* Bailey	
117	07Y-104	No.104	var.*longum* Bailey	
120	07Y-113	5245	var.*conoides* Bailey	Seed company in Shanxi Province
121	07Y-116	A	var.*grossum* Bailey	
124	07Y-119	D1	var.*longum* Bailey	
126	07Y-121	D3	var.*grossum* Bailey	
127	07Y-122	E	var.*longum* Bailey	
132	L262M	C. *chinense*11-12	var. *cerasiorme* Bailey	South America
133	No.7 1-3U		var. *cerasiorme* Bailey	
134	ReLaNo.2 F2		var.*grossum* Bailey	
135	New varieties 404		var.*grossum* Bailey	
138	GuiJiaoWang		var.*conoides* Bailey	
139	CanHong Pod Pepper		var.*conoides* Bailey	
141	No.9 sarrno 1-2		var.*conoides* Bailey	
143	No.4		var.*grossum* Bailey	
144	Thailand Pod Pepper		var.*grossum* Bailey	
146	HuaSheng8736		var.*conoides* Bailey	
148	ReLaNo.4 Line		var.*conoides* Bailey	
149	HuangTan		var.*longum* Bailey	
152	Pepper 505		var.*longum* Bailey	
153	Sweet pepper $12C_7$		var.*grossum* Bailey	
154	Sweet pepper $13C_{13}$		var.*grossum* Bailey	
155	ShuanshuanJiao		var.*grossum* Bailey	

Table S4. **The final core germplasm**

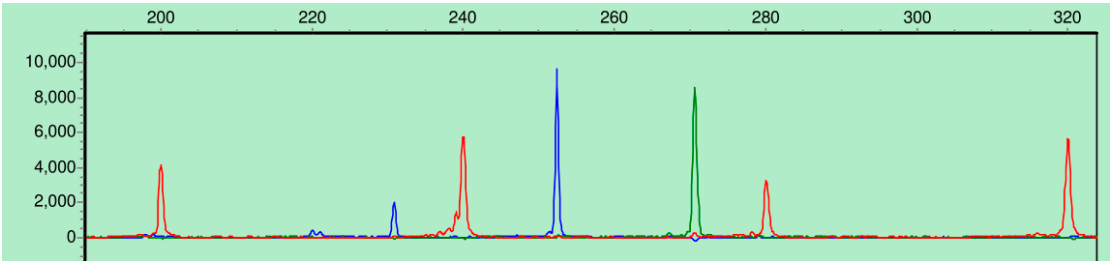
Serial number	ID	Introduction codename	Type	Serial number	ID	Introduction codename	Type
		TianYu	var.*fasciculatum*				var. *longum*
2	04Ca228	No.3	Bailey	100	07Y-82	No.82	Bailey
			var.*fasciculatu*				var. *longum*
3	04Ca229	TianSheng	*m* Bailey	101	07Y-83	No.83	Bailey
			var. *longum*				var. *grossum*
5	04Ca231	Amfora	Bailey	107	07Y-92	No.92	Bailey
			var. *longum*				var. *longum*
6	04Ca232	Una	Bailey	110	07Y-95	No.95	Bailey
			var. *longum*				var. *longum*
7	04Ca233	Romana	Bailey	113	07Y-99	No.99	Bailey
		Palanacko	var.*fasciculatum*				var. *longum*
11	04Ca237	cudo	Bailey	114	07Y-100	No.100	Bailey
			var. *longum*				var. *longum*
12	04Ca238	Zupska rana	Bailey	117	07Y-104	No.104	Bailey
			var. *longum*				var. *conoides*
17	04Ca243	s4	Bailey	120	07Y-113	5245	Bailey
			var. *longum*				var. *grossum*
19	04Ca245	s6	Bailey	121	07Y-116	A	Bailey
			var. *longum*				var. *longum*
21	04Ca247	s8	Bailey	123	07Y-118	C	Bailey
			var. *longum*				var. *longum*
27	04Ca253	s14	Bailey	124	07Y-119	D1	Bailey
			var. *longum*				var. *grossum*
31	04Ca257	s18	Bailey	126	07Y-121	D3	Bailey
			var. *longum*				var. *longum*
32	04Ca258	s19	Bailey	127	07Y-122	E	Bailey
			var. *longum*				var.*cerasiorm*
35	07Y-1	No.1	Bailey	133		No.7 1-3U	*e* Bailey
			var. *longum*				var. *grossum*
42	07Y-11	No.11	Bailey	134		ReLa No.2 F2	Bailey
						New varieties	
			var. *longum*			404 Large fruit	var. *grossum*
45	07Y-14	No.14	Bailey	135		HB-2	Bailey
			var. *longum*				var. *conoides*
55	07Y-27	No.27	Bailey	138		GuiJiaoWang	Bailey
			var. *longum*			CanHong Pod	var. *conoides*
64	07Y-36	No.36	Bailey	139		Pepper	Bailey
			var. *longum*				var. *conoides*
72	07Y-46	No.46	Bailey	141		No.9 sarrno 1-2	Bailey
75	07Y-49	No.49	var. *longum*	143		No.4	var. *grossum*

			Bailey var. *longum*				Bailey var. *grossum*
76	07Y-50	No.50	Bailey var. *longum*	144	Pepper ReLa No.4	Bailey var. *conoides*	
81	07Y-56	No.56	Bailey var. *longum*	148	Line Pepper	Bailey var. *longum*	
85	07Y-61	No.61	Bailey var.*fasciculatum*	149	HuangTan YanHui Pod Pepper	Bailey var. *conoides*	
88	07Y-65	No.65	Bailey var. *longum*	151		Bailey var. *longum*	
90	07Y-67	No.67	Bailey var. *longum*	152	Pepper 505	Bailey var. *grossum*	
91	07Y-68	No.68	Bailey var. *longum*	153	Sweet pepper Bailey12C$_7$	Bailey var. *grossum*	
92	07Y-69	No.69	Bailey var. *longum*	154	Sweet pepper 13C$_{13}$	Bailey var. *grossum*	
93	07Y-70	No.70	Bailey var. *longum*	155	ShuanshuanJia o	Bailey	
95	07Y-77	No.77	Bailey				

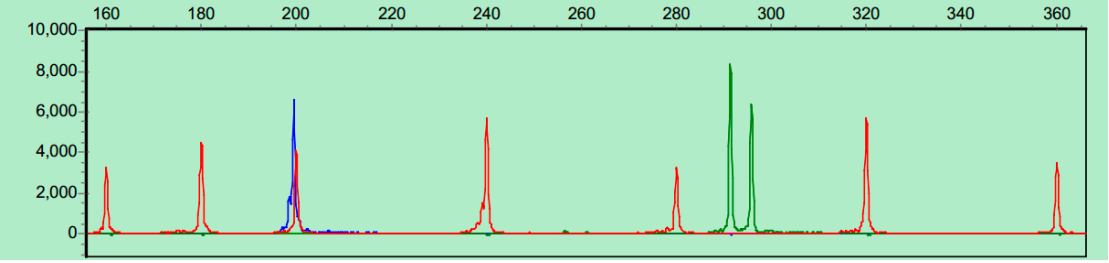
Attached Figure S1



Visualization of Polyacrylamide gel electrophoresis PCR products in some pepper germplasms using SSR primers CIDAM-1and CIDAM-4.



Visualization of Polyacrylamide gel electrophoresis PCR products in some pepper germplasms using SSR primers CIDAM-2and CIDAM-3.



Visualization of Polyacrylamide gel electrophoresis PCR products in some pepper germplasms using SSR primers CIDAM-5 and CIDAM-6.