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Supplementary Material

Assessment of genetic diversity and DNA fingerprinting of rare species of the genus *Crambe*(Brassicaceae)

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Supplementary Table S1. Formulae for the certification of rare species of the genus *Crambe* L.

Examples of genetic passports of plants of the genus *Crambe* made according to the above scheme are given below.

Thus, in *C. maritima*, 7 markers (bands) were identified for the UBC811 primer, among which there were 2 markers characteristic of the genus as a whole (725 and 900 bp). 12 markers were also found for the UBC835 primer, among which 2 markers are characteristic of the genus as a whole (500 and 1650 bp). For the UBC841 primer, 10 markers were identified, among which 1 was characteristic of the whole supertribe, tribe, and subtribe (1050 bp) and 1 characteristic of the genus as a whole (1550 bp). For the UBC857 primer, 7 markers were found, among which 5 were characteristic of the family as a whole (400, 450, 550, 625, and 700 bp). For the UBC878 primer, 17 markers were identified, among which 2 markers are characteristic of the family as a whole (850 and 1400 bp) and 1 marker is characteristic only of the species (1925 bp). For the UBC880 primer, 11 markers were found.

In *C. pinnatifida*, 5 markers were identified for the UBC811 primer, among which there were 2 markers characteristic of the genus as a whole (725 and 900 bp). For the UBC835 primer, 13 markers were found, among which 2 were characteristic of the genus as a whole (500 and 1650 bp). For the UBC841 primer, 6 markers were identified, among which 1 was characteristic of the supertribe, tribe and subtribe as a whole (1050 bp) and 1 was characteristic of the genus as a whole (1550 bp). For the UBC857 primer, 9 markers were found, among which 5 are characteristic of the family as a whole (400, 450, 550, 625, and 700 bp). For the UBC878 primer, 12 markers were found, among which there were 2 markers characteristic of the family as a whole (850 and 1400 bp). For the UBC880 primer, 14 markers were found.

In *C. cordifolia*, 10 markers were identified for the UBC811 primer, among which there were 2 markers characteristic of the genus as a whole (725 and 900 bp). For the UBC835 primer, 7 markers were found, among which 2 markers were characteristic of the genus as a whole (500 and 1650 bp). For the UBC841 primer, 6 markers were identified, among which 1 was characteristic of the whole supertribe, tribe, and subtribe (1050 bp) and 1 characteristic of the genus as a whole (1550 bp). 7 markers were found for the UBC857 primer, among which 5 are characteristic of the family as a whole (400, 450, 550, 625 and 700 bp). For the UBC878 primer, 18 markers were identified, among which there were 2 markers characteristic of the family as a whole (850 and 1400 bp) and 2 markers characteristic only of the species (1650 and 1675 bp). For the UBC880 primer, 6 markers were found.

In *C. tataria*, 4 markers were identified for the UBC811 primer, among which 2 markers are characteristic of the genus as a whole (725 and 900 bp). For the UBC835 primer, 10 markers were found, among which there were 2 markers characteristic of the genus as a whole (500 and 1650 bp). For the UBC841 primer, 3 markers were found, among which 1 is characteristic of the whole supertribe, tribe, and subtribe (1050 bp), 1 characteristic of the genus as a whole (1550 bp), and 1, characteristic only for the species (1700 bp). For the UBC857 primer, 5 markers were found, all of them characteristic of the family as a whole (400, 450, 550, 625, and 700 bp). For the UBC878 primer, 7 markers were found, among which 2 markers were characteristic of the family as a whole (850 and 1400 bp) and 2 markers were characteristic only of the species (1650 and 1675 bp). For the UBC880 primer, 3 markers were found.

In *C. steveniana*, 4 markers were identified for the UBC811 primer, among which there were 2 markers characteristic of the genus as a whole (725 and 900 bp). For the UBC835 primer, 12 markers were found, among which there were 2 markers characteristic of the genus as a whole (500 and 1650 bp). For the UBC841 primer, 6 markers were identified, among which 1 was characteristic of the whole supertribe, tribe, and subtribe (1050 bp) and 1 characteristic of the genus as a whole (1550 bp). For the UBC857 primer, 10 markers were found, among which 5 were characteristic of the family as a whole (400, 450, 550, 625, and 700 bp) and 1 was characteristic only of the species (675 bp). For the UBC878 primer, 10 markers were found, among which there were 2 markers characteristic of the family as a whole (850 and 1400 bp). For the UBC880 primer, 9 markers were found.

1. <u>*Crambe maritima* L.</u>

*UBC811-1-725-g; UBC811-2-900-g.
UBC835-1-500-g; UBC835-2-1650-g.
UBC841-1-1050-st,t,sbt; UBC841-1-1550-g.
UBC857-1-400-f; UBC857-2-450-f; UBC857-3-550-f; UBC857-4-625-f; UBC857-5-700-f.
UBC878-1-850-f; UBC878-2-1400-f; UBC878-1-1925-s.

2. <u>*Crambe pinnatifida* R. Br.</u>

UBC811-1-725-g; UBC811-2-900-g.
UBC835-1-500-g; UBC835-2-1650-g.
UBC841-1-1050-st,t,sbt; UBC841-1-1550-g.
UBC857-1-400-f; UBC857-2-450-f; UBC857-3-550-f; UBC857-4-625-f; UBC857-5-700-f.
UBC878-1-850-f; UBC878-2-1400-f.

3. <u>*Crambe cordifolia* Steven</u>

UBC811-1-725-g; UBC811-2-900-g.
UBC835-1-500-g; UBC835-2-1650-g.
UBC841-1-1050-st,t,sbt; UBC841-1-1550-g.

UBC57-1-400-f; UBC857-2-450-f; UBC857-3-550-f; UBC857-4-625-f; UBC857-5-700-f.
UBC878-1-850-f; UBC878-2-1400-f; UBC878-1-1650-s; UBC878-2-1675-s.

4. *Crambe tataria* Sebeok

UBC811-1-725-g; UBC811-2-900-g.
UBC835-1-500-g; UBC835-2-1650-g.
UBC841-1-1050-st,t,sbt; UBC841-1-1550-g; UBC841-1-1700-s.
UBC57-1-400-f; UBC857-2-450-f; UBC857-3-550-f; UBC857-4-625-f; UBC857-5-700-f.
UBC878-1-850-f; UBC878-2-1400-f; UBC878-1-1650-s; UBC878-2-1675-s.

5. *Crambe steveniana* Rupr.

UBC811-1-725-g; UBC811-2-900-g.
UBC835-1-500-g; UBC835-2-1650-g.
UBC841-1-1050-st,t,sbt; UBC841-1-1550-g.
UBC57-1-400-f; UBC857-2-450-f; UBC857-3-550-f; UBC857-4-625-f; UBC857-5-700-f; UBC57-1-675-s.
UBC878-1-850-f; UBC878-2-1400-f.

*- the name of the primer, then the locus number, marker size, and systematic affiliation (species (s), genus (g), family(f)). If necessary, the formula can include other systematic units (tribes (t), supertribes (st) and subtribes (sbt), subgenus (sg), section (sc), sub-section (sbsc), etc.

Supplementary Table S2. Compilation of the genetic passport of rare plant species

FORM OF THE GENETIC PASSPORT OF A PLANT SPECIES		
Taxonomy of the species	**Family**	
	Genus	
	Species	
Barcode or QR code (if available)		
Symbol name		
Reference to other species (populations) or symbol (if necessary)		
Notes		
General information		
Territorial affiliation		
Coordinates		
Mark on the map (if necessary)		
Notes		
Genetic diversity		
Genetic markers		
PCR-mix		
Amplification Protocol		
Primer Characteristics		
AF size, bp		
Molecular genetic formula		
Polymorphism points		
Notes		
Date		
Full NAME of the researchers		

Supplementary Table S3. The genetic passport of *C. maritima* introduced to BG SFU

GENETIC PASSPORT OF *CRAMBE MARITIMA* L.		
Taxonomy of the species	**Family**	BRASSICACEAE
	Super triba	BRASSICODAE
	Triba	Crambeae
	Sub triba	Raphaniinae
	Genus	*Crambe*
	Section	*Crambe*
	Subsection	*Crambe*
	Species	*Crambe maritima* L.
Barcode or QR code (if available)		-
Symbol name		CM
Reference to other species (populations) or symbol (if necessary)		CS, CT, CC, CP, CE, LL
Notes		-
General information		
Territorial affiliation		Rostov region, Rostov-on-Don, Botanical Garden of the Southern Federal University
Coordinates		47.2388° north latitude 39.6438° east longitude
Mark on the map (if necessary)		-
Notes		-
Genetic diversity		
Genetic markers		Inter Simple Sequence Repeats
PCR-mix		25 mM dNTPs solution – 2.5 µl, 10×PCR buffer – 2.5 µl, 25 mM magnesium chloride ($MgCl_2$) – 2.5 µl, HS Taq polymerase (5 U/µl) – 0.2 µl, DNA matrix (concentration 5 ng/µl)-1 µl, primer (30 pM/µl) – 0.5 µl. The total volume of the PCR mixture was adjusted to 25 µl with sterile deionized water.
Amplification Protocol		94°C-5: 00 min; then 94°C-0: 30 s, Tm °C-0:45 s, 72°C-2: 00 min, 35 cycles; then the final elongation of 72°C – 5:00 min.
Primer Characteristics		UBC 811, $(GA)_8C$, Ta=53
AF size, bp		225-1400
Primer Characteristics		UBC 835, $(AG)_8YC$, Ta=53,5
AF size, bp		500-1650
Primer Characteristics		UBC 841, $(GA)_8YC$, Ta=52,5
AF size, bp		500-2000
Primer Characteristics		UBC 857, $(AC)_8YG$, Ta=54
AF size, bp		300-2000
Primer Characteristics		UBC 878, $(GGAT)_4$, Ta=48,5
AF size, bp		550-2000
Primer Characteristics		UBC 880, $(GGAG)_4$, Ta=49,5
AF size, bp		275-1550
Molecular genetic formula		UBC811-1-375; UBC811-2-400; UBC811-3-450; UBC811-4-725-**g**; UBC811-5-825; UBC811-6-900-**g**; UBC811-7-1250; UBC835-1-500-**g**; UBC835-2-675; UBC835-3-750; UBC835-4-850; UBC835-5-925; UBC835-6-1050; UBC835-7-1150; UBC835-8-1200; UBC835-9-1300; UBC835-10-1350; UBC835-11-1550; UBC835-12-1650-**g**; UBC841-1-1050-**st,t,sbt**; UBC841-2-1150; UBC841-3-1250; UBC841-4-1350; UBC841-5-1400; UBC841-6-1450; UBC841-7-1500; UBC841-8-1550-**g**; UBC841-9-1600; UBC841-10-2000; UBC857-1-400-**f**; UBC857-2-450-**f**; UBC857-3-550-**f**; UBC857-4-625-**f**; UBC857-5-700-**f**; UBC857-6-750; UBC857-7-850; UBC878-1-650; UBC878-2-675; UBC878-3-700; UBC878-4-800; UBC878-5-850-**f**; UBC878-6-925; UBC878-7-950; UBC878-8-1000;

	UBC878-9-1100; UBC878-10-1250; UBC878-11-1300; UBC878-12-1400-**f**; UBC878-13-1450; UBC878-14-1500; UBC878-15-1750; UBC878-16-1925-**s**; UBC878-17-2000; UBC880-1-400; UBC880-2-450; UBC880-3-550; UBC880-4-575; UBC880-5-625; UBC880-6-675; UBC880-7-700; UBC880-8-800; UBC880-9-825; UBC880-10-900; UBC880-11-1000.
Polymorphism points	-
Notes	Marker: species (s), genus (g), family (f), tribes (t), supertribes (st), subtribes (sbt), subgenus (sg), section (sc), subsection (sbsc)
Date	18.06.2020
Full NAME of the researchers	Chokheli Vasily Alexandrovich (genetic analysis) Shmaraeva Antonina Nikolaevna (collection of plant material)