

**Table 1** Country, location, code, and numbers of samples used in this study

Country	Location	Code	No. of sample
China	Jilin	ChA	76
	Heilongjiang	ChB	80
Korea	Chungnam	KorA	47
	Jeonbuk	KorB	51

**Table 2** Morphological characteristics analysis of the Korean and the Chinese Israeli carps (*Cyprinus carpio*)

Country	Code	TL (mm)	BL (mm)	BH (mm)	TW (g)	CF	Body shape	Scale score
	KorA	400.85±24.22 <sup>a</sup>	334.35±19.60 <sup>a</sup>	127.55±10.71 <sup>a</sup>	1286.52±237.60 <sup>a</sup>	1.99±0.32 <sup>b</sup>	0.32±0.02 <sup>b</sup>	3.71±0.49 <sup>b</sup>
<b>Korea</b>	KorB	422.59±35.11 <sup>b</sup>	351.59±30.01 <sup>b</sup>	143.05±13.87 <sup>b</sup>	1713.14±433.73 <sup>a</sup>	2.23±0.23 <sup>c</sup>	0.34±0.02 <sup>c</sup>	3.89±1.27 <sup>b</sup>
	Mean±SD	411.72±29.67	342.97±24.81	135.30±12.29	1499.83±335.67	2.11±0.28	0.33±0.02	3.80±0.88
	ChA	464.56±31.66 <sup>c</sup>	384.35±29.72 <sup>c</sup>	141.22±7.62 <sup>b</sup>	1708.27±269.84 <sup>b</sup>	1.70±0.18 <sup>a</sup>	0.31±0.02 <sup>a</sup>	2.38±1.10 <sup>a</sup>
<b>China</b>	ChB	459.18±30.68 <sup>c</sup>	379.60±27.55 <sup>c</sup>	139.31±8.99 <sup>b</sup>	1681.13±289.38 <sup>b</sup>	1.74±0.20 <sup>a</sup>	0.30±0.02 <sup>a</sup>	2.61±1.49 <sup>a</sup>
	Mean±SD	461.87±31.17	381.98±28.64	140.27±8.31	1694.70±279.61	1.72±0.19	0.31±0.02	2.50±1.30

TL; total length, BL; body length, BH; body height, TW; total weight, CF; condition factor, Body shape; height/length ratio, Values represent mean±standard deviation; means in the same column with different letters are significantly different (P<0.05) as determined by Duncan's multiple range test.

**Table 3** Breeding combination for seed production

<b>Group</b>	<b>Parental Combination</b>	<b>Egg production(ml)</b>
CC	Chinese Israeli carp (♀) × Chinese Israeli carp (♂)	400
CK	Chinese Israeli carp (♀) × Korean Israeli carp (♂)	8,000
KC	Korean Israeli carp (♀) × Chinese Israeli carp (♂)	3,000
KK	Korean Israeli carp (♀) × Korean Israeli carp (♂)	3,000
Common Israeli carp	Korean Israeli carp (♀) × Korean Israeli carp (♂)	1,000

**Table 4** Morphological values of carps by mating group on the 17 month

Age	Morphology	CC	CK	KC	KK	Common Israeli carp	Average
17 month	Sample	136	235	441	408	178	305
	TL (mm)	483.60 ±25.29 <sup>d</sup>	471.52 ±23.31 <sup>b</sup>	491.77 ±26.14 <sup>c</sup>	475.72 ±23.11 <sup>c</sup>	441.85 ±22.52 <sup>a</sup>	472.89 ±24.07
	BH (mm)	156.77 ±8.48 <sup>b</sup>	156.48 ±8.54 <sup>b</sup>	154.18 ±8.08 <sup>b</sup>	156.53 ±8.15 <sup>b</sup>	139.66 ±8.55 <sup>a</sup>	152.724 ±8.36
	TW (g)	2260.00 ±260 <sup>c</sup>	2160.00 ±240 <sup>b</sup>	2270.00 ±260 <sup>c</sup>	2190.00 ±250 <sup>b</sup>	1740.00 ±220 <sup>a</sup>	2124.00 ±246
	CF	2.00 ±0.22 <sup>b</sup>	2.06 ±0.23 <sup>c</sup>	1.91 ±0.23 <sup>a</sup>	2.04 ±0.24 <sup>b</sup>	2.01 ±0.25 <sup>b</sup>	2.00 ±0.23
	Body shape	0.32 ±0.10 <sup>b</sup>	0.33 ±0.10 <sup>c</sup>	0.31 ±0.20 <sup>a</sup>	0.32 ±0.20 <sup>b</sup>	0.32 ±0.02 <sup>a</sup>	0.32 ±0.20
	Scale score	1.98 ±1.15 <sup>a</sup>	2.68 ±1.05 <sup>b</sup>	2.36 ±1.34 <sup>ab</sup>	3.18 ±0.82 <sup>c</sup>	3.36 ±0.93 <sup>c</sup>	2.71 ±1.06

Sample; total number of sample, TL; total length, BH; body height, TW; total weight, CF; condition factor, Body shape; height/length ratio, Values represent mean±standard deviation; means in the same column with different letters are significantly different (P<0.05) as determined by Duncan's multiple range test.