



구기자 4배체 품종 및 계통의 교잡친화성

이보희^{1)*}, 현혜경¹⁾, 손승완¹⁾, 최현구¹ 송전의¹⁾
¹⁾충청남도농업기술원 구기자연구소

Cross-compatibility of tetradiploid varieties and new breeds of Goji Berry (*Lycium chinense* Miller)

Bo Hee Lee^{1)*}, Hyeon Hae Kyeong¹⁾, Son Seung Wan¹⁾, Choi Hyun Gu¹⁾, Song Jeon Eui¹⁾
¹⁾Goji berry Research Institute of Chungnam-Do ARES, Cheongyang 33319, Korea.

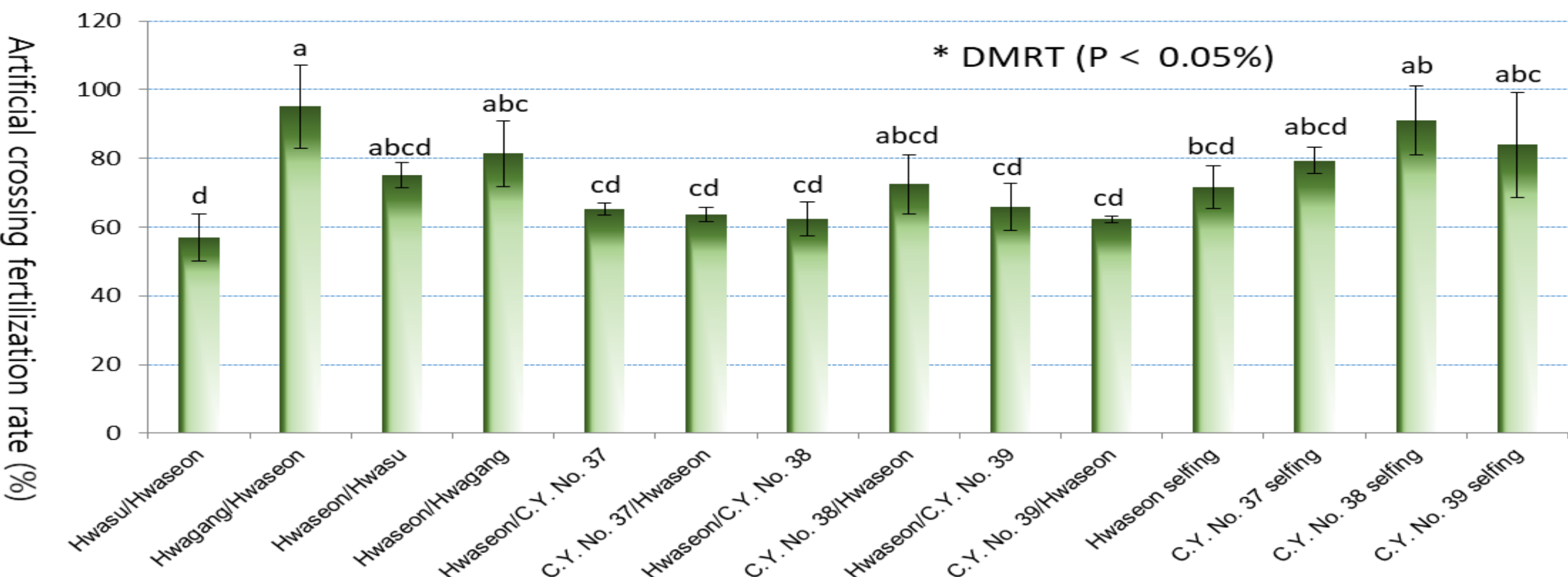
Background

Goji berry is a food material that has been traditionally consumed in South Korea for medicinal and edible uses. Recently, several tetradiploid cultivars have been bred for more yielding and pests and diseases resistance. Tetradiploid varieties of Goji berry (*Lycium chinense*) have a tendency of self-compatibility in fruit bearing. Although tetradiploid varieties of Goji berry have self-compatibility we need to investigate cross-compatibility with newly developed tetradiploid varieties. Therefore, this experiment was carried out to select proper pollinizer through researching self-compatible and Cross-compatibility of tetradiploid varieties and new breeds of Goji berry.

Methods and Results

The cross-compatibility between tetradiploid varieties were investigated by evaluation of bearing rate and characteristics of fruits had harvested after artificial fertilization. Evaluations of pollination affinity of tetraploid varieties and new breeds were tested with two-ways by changing the maternal and pollen parent for each combination. According to the test results, ‘Hwaseon’ Goji berry had a high pollination affinity with ‘Hwagang’ Goji berry, and the fruit characteristics were also found to be larger and heavier than other combinations, so it was judged to be a good combination. ‘Hwasu’ Goji berry had the highest fertilization affinity with ‘Cheongyang No. 37’, and the fruit characteristics were also found to be larger and heavier than other combinations, indicating that it was the best combination. Inference from the test results of pollination affinity of self-compatible tetraploid Goji berry, it was possible to confirm the metaxenia phenomenon in which the paternal characteristics appear in the fruit, and it was considered to be useful for selection of pollination.

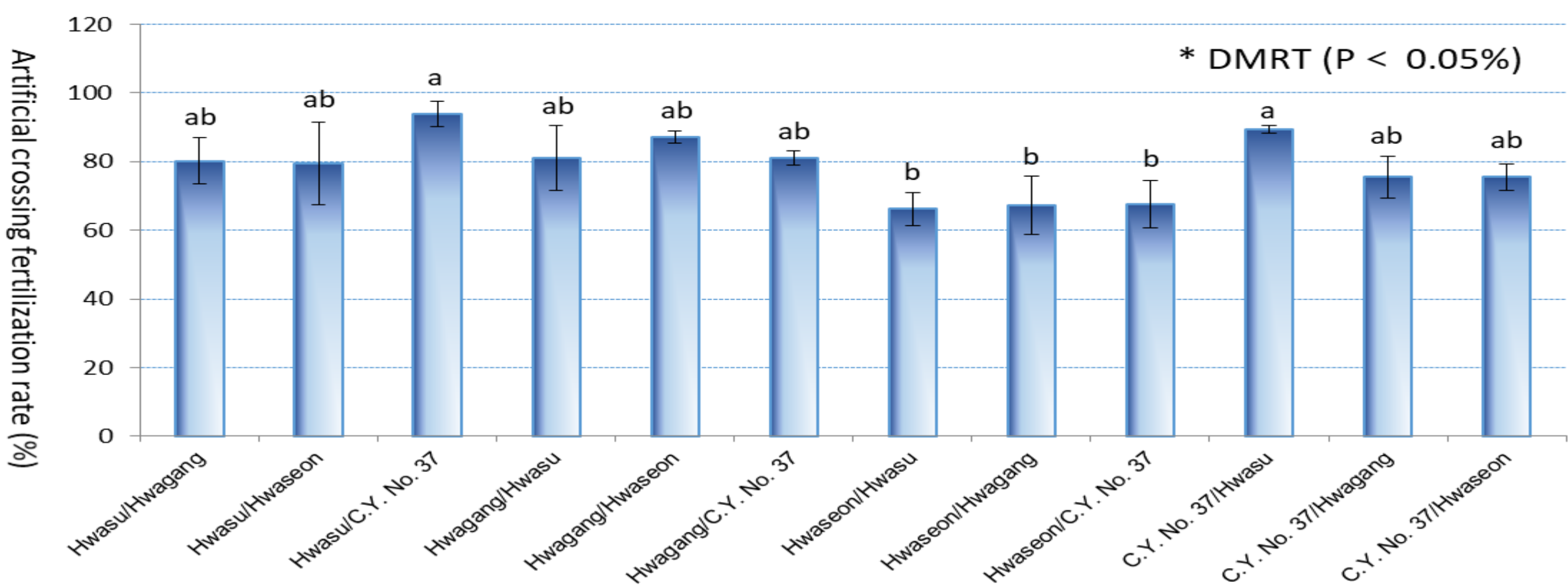
Bearing rate and characteristics of fruits of tetraploids(2020)



Mating combination (Maternal/Pollen)	Fruit length ¹⁾ (mm)	Fruit width (mm)	100 fresh fruit weight (g)	No. of seed per fruit	Seeds weight of 100 fruits (g)
Hwasu/Hwaseon	21.4±0.4 b	7.3±0.1 cde	90.6±6.9 b	9.6±0.7 e	0.44±0.033 bcd
Hwagang/Hwaseon	23.1±0.3 a	8.8±0.0 a	128.6±3.5 a	14.9±0.4 a	0.51±0.014 a
Hwaseon/Hwasu	21.5±0.2 b	7.9±0.2 abcd	90.2±2.2 b	13.6±0.3 abc	0.49±0.012 abc
Hwaseon/Hwagang	20.4±0.4 bc	7.7±0.2 bcd	75.5±1.5 cd	12.5±0.3 bcd	0.50±0.010 ab
Hwaseon/C.Y. No. 37	19.6±0.7 cd	7.5±0.3 bcd	72.5±1.9 de	14.5±0.4 ab	0.40±0.011 d
C.Y. No. 37/Hwaseon	15.7±0.7 g	7.1±0.6 cde	58.8±2.3 f	13.8±0.5 abc	0.46±0.018 abcd
Hwaseon/C.Y. No. 38	18.7±0.4 de	7.6±0.8 bcd	86.9±3.0 bc	13.5±0.5 abc	0.43±0.015 cd
C.Y. No. 38/Hwaseon	15.0±0.1 g	8.0±0.2 abcd	71.5±4.4 de	12.4±0.8 cd	0.41±0.025 d
Hwaseon/C.Y. No. 39	20.0±0.6 bcd	8.1±0.1 abc	95.0±4.7 b	14.3±0.7 abc	0.48±0.024 abc
C.Y. No. 39/Hwaseon	21.2±0.2 b	8.4±0.1 ab	94.7±3.4 b	13.3±0.5 abc	0.45±0.016 abcd
Hwaseon selfing	18.8±0.7 de	7.0±0.3 de	61.5±3.1 ef	14.1±0.7 abc	0.40±0.020 d
C.Y. No. 37 selfing	17.4±0.7 ef	6.3±0.3 e	51.6±4.0 f	11.1±0.9 de	0.31±0.024 e
C.Y. No. 38 selfing	15.9±0.2 fg	6.3±0.2 e	60.5±1.2 ef	14.8±0.3 a	0.49±0.010 abc
C.Y. No. 39 selfing	21.3±0.8 b	6.5±0.3 e	85.9±6.8 bc	14.1±1.1 abc	0.40±0.040 d

• DMRT (P < 0.05%)

Bearing rate and characteristics of fruits of tetraploids(2021)



Mating combination (Maternal/Pollen)	Fruit length ¹⁾ (mm)	Fruit width (mm)	100 fresh fruit weight (g)	No. of seed per fruit	Seeds weight of 100 fruits (g)
Hwasu/Hwagang	24.0±0.6 a	11.3±0.1 bc	209.9±4.3 cdef	13.7±0.2 cde	5.90±0.058 def
Hwasu/Hwaseon	23.4±0.3 a	11.3±0.1 bc	203.4±6.9 def	12.9±0.6 de	5.63±0.186 defg
Hwasu/C.Y. No. 37	26.1±0.5 a	12.0±0.2 a	251.0±14.6 ab	16.8±1.2 bcd	8.00±0.513 a
Hwagang/Hwasu	23.5±0.3 a	12.0±0.3 a	234.6±4.1 abcd	17.1±0.5 bcd	5.53±0.296 efg
Hwagang/Hwaseon	24.2±0.3 a	12.3±0.1 a	257.8±2.4 ab	18.2±0.6 abc	7.17±0.240 abc
Hwagang/C.Y. No. 37	24.1±0.4 a	12.0±0.1 a	254.8±6.7 ab	18.9±0.3 ab	6.77±0.033 bcd
Hwaseon/Hwasu	25.6±0.3 a	12.2±0.1 a	265.1±6.9 a	16.7±0.4 bcd	6.17±0.120 cdef
Hwaseon/Hwagang	24.7±0.4 a	11.9±0.1 ab	241.3±5.2 abc	13.7±0.1 cde	5.07±0.120 fg
Hwaseon/C.Y. No. 37	23.4±0.1 b	10.8±0.1 cd	195.7±1.7 ef	15.5±1.3 bcd	4.77±0.318 g
C.Y. No. 37/Hwasu	22.0±0.2 ab	11.0±0.1 cd	190.3±5.5 f	12.5±0.7 de	4.73±0.240 g
C.Y. No. 37/Hwagang	22.9±0.1 a	11.7±0.0 ab	227.2±2.9 bcde	16.8±0.4 bcd	6.50±0.173 bcde
C.Y. No. 37/Hwaseon	23.4±0.1 a	12.0±0.1 a	235.1±1.9 abcd	21.6±4.5 a	6.57±0.233 bcde
C.Y. No. 37 selfing	21.9±1.2 ab	10.7±0.3 cd	194.0±11.5 ef	15.9±0.9 bcd	7.40±0.577 ab
C.Y. No. 41 selfing	25.4±0.5 a	10.6±0.5 d	158.3±31.1 g	10.6±1.6 e	3.57±0.809 h

• DMRT (P < 0.05%)



Hwagang Goji berry



Hwaseon Goji berry



Hwasu Goji berry

Conclusions

As a result of examining the pollination affinity of tetraploid Goji berry, the affinity between ‘Hwagang’ and ‘Hwaseon’ Goji berry was high, and ‘Hwasu’ and ‘Cheongyang No. 37’ had good hybridization affinity, so good combinations were selected for pollination.

