diversity

MDPI

Supplementary

Diversity and its implications of *Curcuma* subgenus *Hitcheniopsis* (Zingiberaceae) with a new record for Vietnam

Table S1. Evaluation traits and subtraits used for the preliminary assessment of ornamental value.

Main trait	Sub-trait	Score	Description
Overall Plant Size and Height	Overall Plant Size and Height	1	Very large, likely too big for a pot
		2	Large, may require a large pot, less ideal
		3	Medium-tall, acceptable for pot display
		4	Medium, Good size for pot
		5	Small and compact, ideal for small/medium pots
Leaves	Leaf Size	1	Very large, likely too big for 20 cm pot
		2	Large, may look crowded in 20 cm pot
		3	Medium-large, acceptable size for pot display
		4	Medium, good size for pot
		5	Small, ideal size for 20 cm pot, compact
	* Leaf Color & Midrib/Margin	1	Plain green, midrib/margin green or white hyaline
		3	Green with slightly red tinge at midrib/lower surface
		5	With prominent reddish midrib/margin/lower surface
Inflorescences	Peduncle	1	Very short, thyrse mostly hidden among leaves
		2	Short, thyrse partially visible
		3	Medium length, thyrse moderately visible above leaves
		4	Long, thyrse clearly visible and prominent
		5	Very long, elevates thyrse well above leaves, highly ornamental
	Thyrse length	1	Very short, < 3 cm long
		2	Short, 3–5 cm long
		3	Medium length, 5–7 cm long
		4	Long, clearly visible and attractive, 7–10 cm long
		5	Very long, well displayed, >10 cm long
	Thyrse diameter	1	Very narrow, barely noticeable, low visual impact, < 2 cm in diameter
		2	Narrow, slightly visible, minimal impact, 2–3 cm in diameter
		3	Medium, moderately visible, acceptable ornamental display, 3–4 cm in diameter
		4	Broad, visually appealing and prominent, 4-5 cm in diameter
		5	Very broad, strong display, > 5 cm in diameter
	Inflorescence longevity	1	Visible for <1 week
		3	Lasts 1–2 weeks
		5	Long-lasting (>3 weeks), maintaining ornamental value
Bracts	Coma bracts	1	No coma bract, or coma poorly developed, same color as fertile bract (minimal visual impact)
		2	Coma present but very small, mostly same color as fertile bract, low ornamental value
		3	Coma moderately developed, some color difference from fertile bract, medium size, moderate ornamental value

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		4	Coma well developed, clearly different color from fertile bract, visually attractive, medium-large size
		5	Coma fully developed, large and striking color difference, highly ornamental and prominent
	* Fertile Bracts	1	Completely green, no pattern inside or outside (minimal ornamental value)
		3	Green outside / white inside, or green outside with small white pattern/stripe (moderate ornamental value)
		5	Striking color contrast with red, pink, or white, prominent pattern/stripes/veins, highly ornamental
Flowers	* Flowers size	1	Very small, flower does not emerge beyond fertile bract (minimal ornamental impact)
		3	Medium, flower emerges about equal to fertile bract (moderate ornamental value)
		5	Large, flower clearly protrudes beyond bract, highly ornamental and prominent
	* Flower Color and Contrast	1	Flower color is faint or pale; weak contrast with bracts or foliage; low visual attractiveness.
		3	Flower color is moderately vivid; some contrast with bracts or foliage; moderately attractive.
		5	Flower color is vivid and eye-catching; strong contrast with bracts or foliage; highly attractive in display.
	* Shape and Floral Organs: Staminodes / Labellum	1	Staminodes or labellum are very small, short, or not spreading; flower appearance is inconspicuous.
		3	Staminodes or labellum are of moderate size and partially spreading; flower is moderately showy.
		5	Staminodes or labellum are large, spreading, and well-developed; flower is conspicuous and highly ornamental.
	* Flower Abundance and Display	1	Few flowers per inflorescence; only a small number of flowers open per day; overall display weak.
		3	Moderate number of flowers per inflorescence; daily flowering is limited but flowers are visible for several consecutive days, giving a moderate display.
		5	Inflorescences bear many flowers; although only a few open per day (due to the cincinni arrangement), successive flowering provides a prolonged and attractive display.
Overall aesthetic impression	* Aesthetic Balance (integration of leaves, bracts, flowers in display)	1	Poor balance, unattractive overall
		3	Moderate balance, some visual appeal
		5	Excellent balance, plant looks striking and harmonious
	* Uniqueness / Rarity of Appearance	1	Common appearance, very similar to most related species; no distinctive features.
		3	Moderately unique; shows some unusual traits (e.g., different shade, moderate floral variation), somewhat distinctive.
		5	Highly unique and strikingly different from related species; exceptional appearance (e.g., rare color combination, unusual floral morphology), highly desirable as an ornamental plant.

* This character is difficult to assess precisely; therefore, a 3-level scoring system (1, 3, 5) was used to clearly reflect differences among individuals.

Table S2. Ornamental Value Index of each individual and species of *Curcuma* subgen. *Hitcheniopsis* in Vietnam.

Species	Overall Plant Size and Height	Leaf Size	* Leaf Color & Midrib/Margin	Peduncle	Thyrse length	Thyrse diameter	Inflorescence longevity	Coma bracts	* Fertile Bracts	* Flowers size	* Flower Color and Contrast	* Shape and Floral Organs	* Flower Abundance and Display	* Aesthetic Balance	* Uniqueness / Rarity of Appearance	Total Score	OVI individual	OVI species (Mean)	Standard Deviation (SD)	Range (Min–Max)
*Curcuma alismatifolia***1**	3	4	1	5	5	3	5	5	1	5	5	5	3	5	5	60	0.750			
*Curcuma alismatifolia***2**	4	4	1	5	5	4	5	5	3	5	5	5	3	5	5	64	0.817			
*Curcuma alismatifolia***3**	4	4	1	5	5	4	5	5	1	5	5	5	3	5	5	62	0.783	0.773	0.032	0.733–0.817
*Curcuma alismatifolia***4**	3	3	1	5	5	4	5	5	3	5	5	5	3	5	5	62	0.783			
*Curcuma alismatifolia***5**	3	3	1	5	5	3	5	5	1	5	5	5	3	5	5	59	0.733			
*Curcuma campanulata***1**	5	5	1	3	2	2	5	1	1	5	5	5	5	5	3	53	0.633			
*Curcuma campanulata***2**	5	5	3	3	2	2	5	1	1	5	5	5	5	5	3	55	0.667			
*Curcuma campanulata***3**	5	5	1	3	2	2	5	1	1	5	5	5	5	5	3	53	0.633	0.647	0.018	0.633–0.667
*Curcuma campanulata***4**	5	5	1	3	2	2	5	1	1	5	5	5	5	5	3	53	0.633			
*Curcuma campanulata***5**	5	5	3	3	2	2	5	1	1	5	5	5	5	5	3	55	0.667			
*Curcuma clovisii***1**	5	5	1	3	2	2	5	1	5	5	5	5	5	5	3	57	0.700			
*Curcuma clovisii***2**	5	5	1	3	2	2	5	1	1	5	5	5	5	5	3	53	0.633			
*Curcuma clovisii***3**	5	5	1	3	2	2	5	1	5	5	5	5	5	5	3	57	0.700	0.680	0.045	0.633–0.733
*Curcuma clovisii***4**	5	5	3	3	2	2	5	1	5	5	5	5	5	5	3	59	0.733			
*Curcuma clovisii***5**	5	5	1	3	2	2	5	1	1	5	5	5	5	5	3	53	0.633			
*Curcuma gracillima***1**	5	5	1	4	3	2	5	3	1	3	3	3	3	3	3	47	0.533			
*Curcuma gracillima***2**	5	5	1	4	3	2	5	3	1	3	3	3	3	3	3	47	0.533			
*Curcuma gracillima***3**	5	5	1	4	2	2	5	3	1	3	3	3	3	3	3	46	0.517	0.523	0.009	0.517–0.533
*Curcuma gracillima***4**	5	5	1	4	2	2	5	3	1	3	3	3	3	3	3	46	0.517			
*Curcuma gracillima***5**	5	5	1	4	2	2	5	3	1	3	3	3	3	3	3	46	0.517			
*Curcuma harmandii***1**	3	3	1	5	5	2	5	1	1	3	5	3	3	3	5	48	0.550			
*Curcuma harmandii***2**	3	3	1	5	4	2	5	1	1	3	5	3	3	3	5	47	0.533			
*Curcuma harmandii***3**	3	3	1	5	5	2	5	1	1	3	5	3	3	3	5	48	0.550	0.543	0.009	0.533–0.550
*Curcuma harmandii***4**	3	3	1	5	4	2	5	1	1	3	5	3	3	3	5	47	0.533			
*Curcuma harmandii***5**	3	3	1	5	5	2	5	1	1	3	5	3	3	3	5	48	0.550			
*Curcuma leonidii***1**	4	4	1	2	2	2	5	1	1	5	5	5	5	5	5	52	0.617			
*Curcuma leonidii***2**	4	4	1	2	2	2	5	1	1	5	5	5	5	5	5	52	0.617			
*Curcuma leonidii***3**	4	5	1	2	2	3	5	1	1	5	5	5	5	5	5	54	0.650	0.627	0.015	0.617–0.650
*Curcuma leonidii***4**	4	4	1	2	2	2	5	1	1	5	5	5	5	5	5	52	0.617			
*Curcuma leonidii***5**	4	5	1	2	2	2	5	1	1	5	5	5	5	5	5	53	0.633			
*Curcuma pygmaea***1**	5	4	5	2	2	2	5	1	1	3	5	3	1	3	1	43	0.467			
*Curcuma pygmaea***2**	4	4	5	2	2	2	5	1	1	3	5	3	1	3	1	42	0.450			
*Curcuma pygmaea***3**	5	4	5	2	2	2	5	1	1	3	5	3	1	3	1	43	0.467	0.460	0.009	0.450–0.467
*Curcuma pygmaea***4**	4	4	5	2	2	2	5	1	1	3	5	3	1	3	1	42	0.450			
*Curcuma pygmaea***5**	5	4	5	2	2	2	5	1	1	3	5	3	1	3	1	43	0.467			
*Curcuma rhabdota***1**	5	4	1	5	5	3	5	5	5	5	3	3	3	5	5	62	0.783			
*Curcuma rhabdota***2**	4	3	1	5	5	4	5	5	5	5	3	3	3	5	5	61	0.767			
*Curcuma rhabdota***3**	4	4	1	5	5	3	5	5	5	5	3	3	3	5	5	61	0.767	0.780	0.014	0.767–0.800
*Curcuma rhabdota***4**	5	4	1	5	5	4	5	5	5	5	3	3	3	5	5	63	0.800			
*Curcuma rhabdota***5**	4	4	1	5	5	4	5	5	5	5	3	3	3	5	5	62	0.783			
*Curcuma sparganiifolia***1**	4	5	1	5	2	4	5	1	5	3	3	3	1	3	5	50	0.583			
*Curcuma sparganiifolia***2**	4	5	1	5	3	4	5	1	5	3	3	3	1	5	5	53	0.633			
*Curcuma sparganiifolia***3**	4	5	1	5	3	4	5	1	5	3	3	3	1	3	5	51	0.600	0.613	0.022	0.583–0.633
*Curcuma sparganiifolia***4**	4	5	1	5	3	4	5	1	5	3	3	3	1	5	5	53	0.633			
*Curcuma sparganiifolia***5**	4	5	1	5	2	4	5	1	5	3	3	3	1	5	5	52	0.617			
*Curcuma thorelii***1**	4	4	1	5	4	4	5	5	3	3	5	3	3	5	5	59	0.733			
*Curcuma thorelii***2**	3	3	1	5	5	5	5	5	3	3	5	3	5	5	5	61	0.767			
*Curcuma thorelii***3**	4	4	1	5	4	3	5	5	3	3	5	3	3	5	5	58	0.717	0.750	0.024	0.717–0.767
*Curcuma thorelii***4**	4	4	1	5	4	4	5	5	3	3	5	3	5	5	5	61	0.767			
*Curcuma thorelii***5**	3	3	1	5	5	5	5	5	3	3	5	3	5	5	5	61	0.767			

* This character is difficult to assess precisely; therefore, a 3-level scoring system (1, 3, 5) was used to clearly reflect differences among individuals.