

**AMORPHOPHALLUS MARGARITIFER (ROXB.) KUNTH (ARACEAE): A NEW RECORD FOR THE FLORA OF RAJASTHAN, INDIA**

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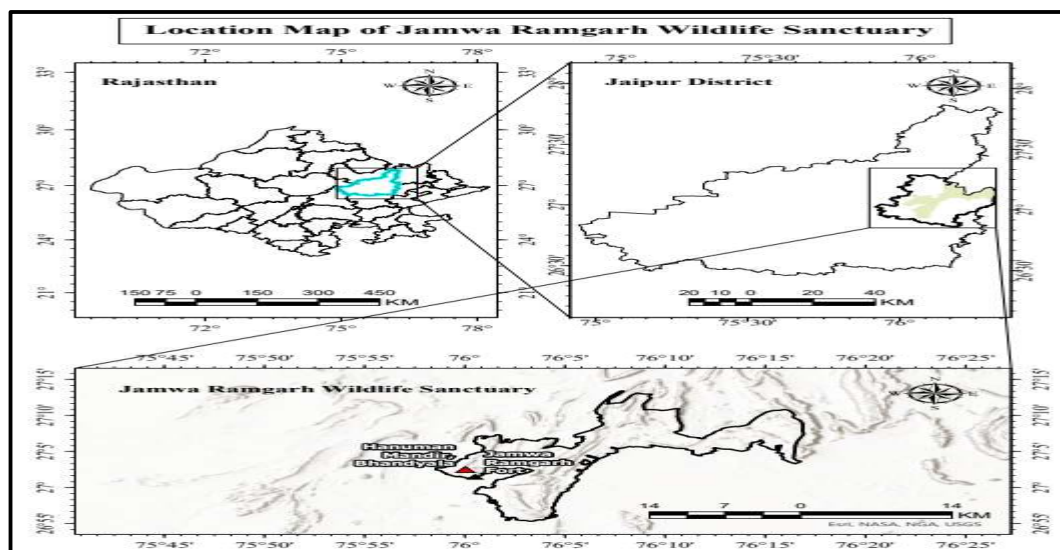
*Amorphophallus margaritifer* (Roxb.) Kunth of the family Araceae is reported for the first time from Rajasthan, India. *A. margaritifer* is an important tuberous aroid species, with its distribution recorded for the first time from Jamwa Ramgarh Wildlife Sanctuary, Jaipur, Rajasthan, as a new addition to the flora of Rajasthan. A globose tuber, a staminodial zone/neuters between the male and female zones, and the absence of a spadix appendix characterize the species. A brief citation, detailed description, flowering and fruiting periods, habitat information, and photographs are provided to facilitate easy and accurate identification.

**Keywords:** *Amorphophallus margaritifer*, Araceae, Endemic, Jamwa Ramgarh Wildlife Sanctuary, New record.

**Introduction**

Genus *Amorphophallus* belongs to the Arum family (Araceae) with 230 species distributed in the tropical and subtropical regions of the world<sup>1,2</sup>. *Amorphophallus* is a genus of aroids occurring in Africa, Madagascar, India, continental Southeast Asia, Malesia, and northeastern Australia<sup>3</sup>. In India, the genus is represented by 19 species and

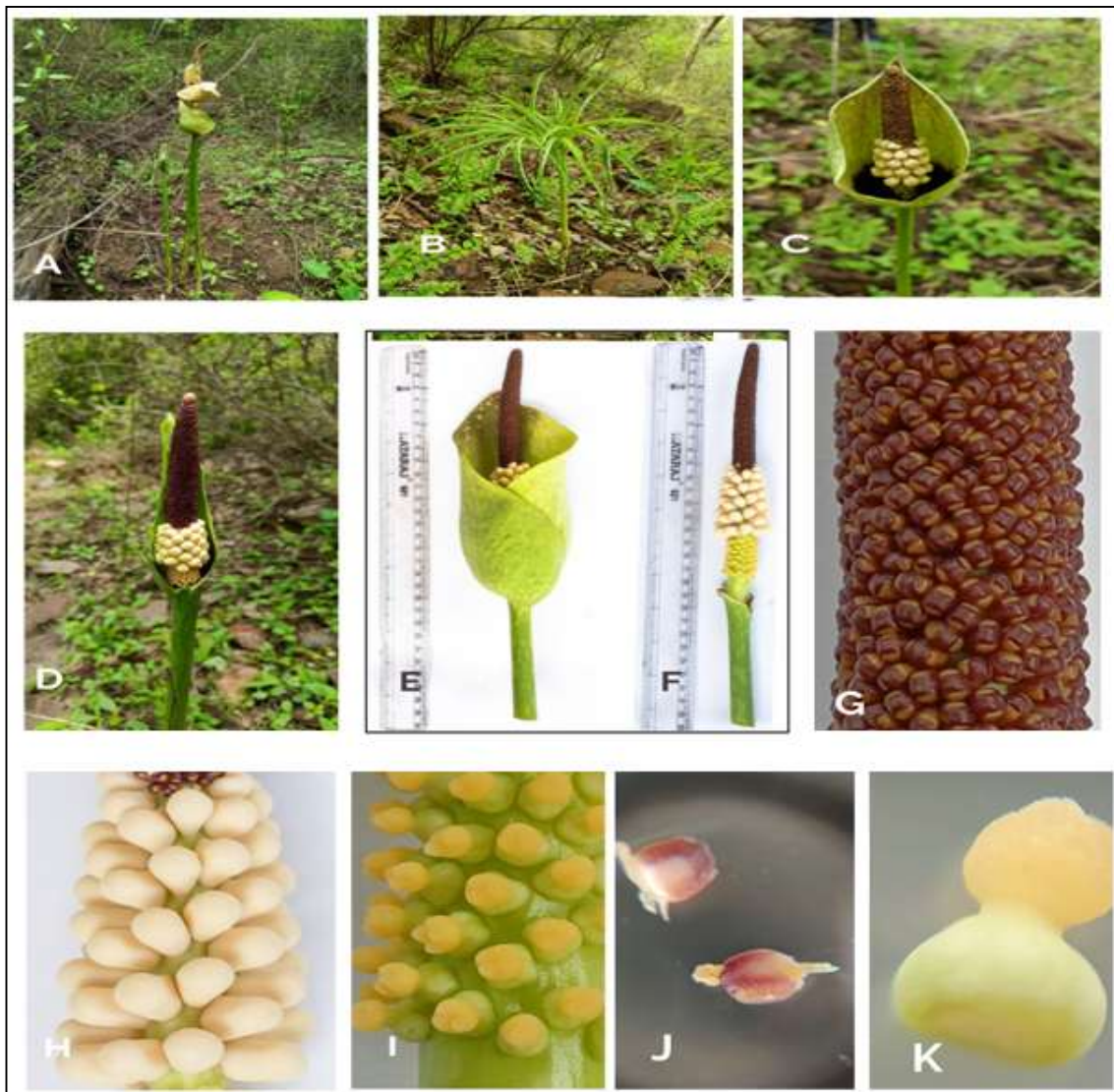
five varieties, grouped into three sections: *Amorphophallus*, *Conophallus*, and *Rhaphiophallus*. Of these, 13 species and three varieties are endemic to India<sup>4-6</sup>. The *Rhaphiophallus* (Schott) Engl. section is the largest in India, comprising nine species, all of which are endemic to India except for *A. sylvaticus*, which is also reported from Sri Lanka<sup>7</sup>.



**Fig. 1. Sampling sites of the plant (Jamwa Ramgarh Wildlife Sanctuary, Jaipur, Rajasthan)**

Rajasthan, one of the largest states in India, spans an area of 3,42,239 sq. km and boasts a unique natural landscape. The Jamwa Ramgarh Wildlife Sanctuary, located northeast of Jaipur, was declared a wildlife sanctuary in 1982. Covering an area of 300 sq. km, the sanctuary lies between 76°03'E longitude and 27°02'N latitude (Fig. 1). Jaipur experiences an extreme climate, with long, intensely hot summers and cold, dry winters. The winter season lasts from November to March, while summer extends from April to June. The monsoon season begins in July and

continues until mid-September, followed by a moderate and pleasant climate in September and October. The flora of Rajasthan has been extensively studied and documented by numerous taxonomists, including Sharma and Tiagi<sup>8</sup>, Shetty and Singh<sup>9-11</sup>, Tiagi and Aery<sup>12</sup>, Singh and Srivastava<sup>13</sup>, Meena and Yadav<sup>14</sup>, Kumar<sup>15</sup>, Solanki<sup>16</sup>, Kotiya<sup>17,18</sup>, Purohit<sup>19-21</sup>, Sharma<sup>22</sup>, Ravikumar<sup>23</sup>, Sharma and Sarsavan<sup>24</sup>, Kumar<sup>25</sup>, and Solanki<sup>26</sup>. These studies have significantly enriched our understanding of the State's floral composition.



**Fig. 2: *Amorphophallus margaritifera* (A) Plant habit, (B) Leaf with petiole, (C) & (E) Spadix with Spathe, (D) & (F) Spadix, (G) Male Zone, (H) Staminal zone, (I) Female zone, (J) Male flower, (K) Female flower.**

## Material and Methods

During a recent plant exploration at Jamwa Ramgarh Wildlife Sanctuary, an intriguing monocot plant was collected. The voucher specimen was collected and processed following standard herbarium procedures, and the identification of the plant material was conducted through a review of related literature. A thorough examination of Rajasthan's Floras (Bhandari<sup>27</sup>; Sharma and Tiagi<sup>8</sup>; Shetty and Singh<sup>9-11</sup>; Tiagi and Aery<sup>12</sup>; Meena and Yadav<sup>14</sup>; Kotiya<sup>17</sup>) revealed that *Amorphophallus margaritifera* is not listed in any of these works or other relevant literature. Hence, this species of *Amorphophallus* is a new record for Rajasthan and worth publishing. The measurements and descriptions were based on freshly collected material and herbarium specimens.

## Results and Discussion

### Taxonomic Description:

*Amorphophallus margaritifera* (Roxb.) Kunth, Enum. Pl. 3: 34, 1841; Hett. & De Sarker, Aroideana 19: 131, 1996. *Arum margaritifera* Roxb., Fl. Ind. (Ed., Carey) 3: 512, 1832; Wight, Ic. 3(1): 6, t. 795, 1844. *Plesmonium margaritifera* (Roxb.) Schott, Syn. Aroid.: 34, 1856; Hook. f., FBI 6: 518, 1893; Engl., Pflanzenr. IV 23C (48): 49, 1911; C.E.C. Fisch. in Gamble, Fl. Pres. Madras: 1588, 1931.

Perennial herbs, tubers nearly globose, seasonally producing numerous small globose to fusiform immature offsets associated with mature tuber, varying from 7-11 per tuber, skin muddy pale brown to yellowish brown; leaf solitary, petiole soft and smooth, 24-84 cm long, 1.0-3.5 cm diam. at base, green with numerous narrowly elongated black- margined pale-green stripes, paler towards the tip, dark green or blackish green at the base; lamina 25-60 cm across, dark green and smooth; leaflets linear-lanceolate, 8-25 cm long, 1.1-3.5 cm broad, margins entire, upper surface green, paler below. Infl. long peduncled; peduncle soft, 30-80 cm long, 1-4 cm diam., color same as that of the petiole.

Spathe broadly ovate or broadly triangular, 10-18 cm long, 14-20 cm broad, tip acute, pale greenish outside, pale purplish inside, dark purplish, prominently verrucate at the base within Spadix 12-20.5 cm long, as long as or slightly longer than spathe; stipe 3-5 mm long, 5-8 mm diam. greenish; female zone 1.1-4.0 cm long, 9-18 mm diam.; staminodial zone between male and female zone 2.0-5.5 cm long; male zone longer than female zone, elongate-conoidal, 6-9.5 cm long, 1.0-1.5 cm diam. at base; appendix absent. Female flowers: each 5-6 mm high, ovary pale green, slightly broader than stigma, 2.5-3.0 mm long, 1.5-2 mm diam.; style very short, 0.5-1.0 mm long, ca. 1 mm diam., color as like ovary; stigma yellowish, capitate, 2-4 lobed, 1-1.2 mm high, ca. 2 mm in diam. Neuter flowers loosely arranged, large, elongate-obovoid, 7-9 mm long, 4-5 mm diam. at the top, cream, tip obtuse, or subtruncate. Male flowers many, 2-3 mm high, 1.4-2.1 mm broad, pale brownish yellow. Fruit globose berries, red at maturity, ca. 8 mm long, 1-3 seeded (Fig. 2).

### Flowering & Fruiting:

May-August

### Habitat:

In moist deciduous forest (Fig. 2), on the rocky hill with partial shade.

### Specimen examined:

Specimen authentication by Dr. Amit Kotiya (RUBL21695: Date 22 August 2024); collected and examined by Yogita Solanki from Jamwa Ramgarh Wildlife Sanctuary, Jaipur, Rajasthan, India, date of collection- July 07, 2024.

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## References

- Heterscheid WLA and Sarker DD 1996, Notes on the Genus *Amorphophallus* (Araceae) - 7. *Amorphophallus* (*Plesmonium*) *margaritifer* (Roxb.) Kunth in *Profile. Aroidean* **19** 132–138.
- Islam F, Labib RK, Zehravi M, Lami MS, Das R, Singh LP, Mandhadi JR, Balan P, Khan J, Khan SL, Nainu F, Nafady MH, Rab SO, Emran TB and Wilairatana P 2023, Genus *Amorphophallus*: A Comprehensive Overview on Phytochemistry, Ethnomedicinal Uses, and Pharmacological Activities. *Plants* **12**(23) 3945.
- Mayo SJ, Bogner J and Boyce PC 1997, *Amorphophallus*. In: *The genera of Araceae*. Royal Botanic Gardens, Kew, pp. 235-239.
- Jaleel VA, Sivadasan M, Ahmed AH, Thomas J and Alatar AA 2011, Revision of *Amorphophallus* Blume ex Decne. sect. *Raphiophallus* (Schot) Engl. (Araceae) in India. *Bangladesh Journal of Plant Taxonomy* **18** 1–26.
- Jaleel VA, Sivadasan M, Ahmed AH and Thomas J 2012, A Taxonomic Revision of *Amorphophallus* Blume ex Decne. Sect. *Conophallus* (Scot) Engl. (Araceae) in India. *Bangladesh Journal of Plant Taxonomy* **19**(2) 135–153.
- Jaleel VA, Sivadasan M, Ahmed AH, Thomas J and Alatar AA 2014, A taxonomic revision of *Amorphophallus* Blume ex Decne. Sect. *Amorphophallus* (Araceae) in India. *Bangladesh Journal of Plant Taxonomy* **21**(2) 105–120.
- Gholave AR, Govekar RS, Kahalkar VI, Sardesai MM and Yadav SR 2018, *Amorphophallus longiconnectivus* and *A. margaritifer*: additional aroids from Maharashtra with notes on the floral variations. *Journal of Threatened Taxa* **10**(11) 12610–12613.
- Sharma S and Tiagi B 1979, *Flora of North-East Rajasthan*. Kalyani Publishers, New Delhi.
- Shetty BV and Singh V 1987, *Flora of Rajasthan*. Botanical Survey of India, Howrah, Kolkata, vol. 1.
- Shetty BV and Singh V 1991, *Flora of Rajasthan*. Botanical Survey of India, Howrah, Kolkata, vol. 2.
- Shetty BV and Singh V 1993, *Flora of Rajasthan*. Botanical Survey of India, Howrah, Kolkata, vol.3.
- Tiagi B and Aery NC 2007, *Flora of Rajasthan* (South and South East region). Himanshu Publication, New Delhi.
- Singh V and Srivastava AK 2007, *Biodiversity of Ranthambhore Tiger Reserve Rajasthan*. Scientific Publisher, Jodhpur, India.
- Meena KL and Yadav BL 2011, *Flora of South Central Rajasthan*. Scientific Publisher's, Jodhpur, Rajasthan.
- Kumar A, Solanki Y, Kotiya A and Mohil P 2020, *Solanum villosum* Mill. (Solanaceae): New Addition to the Flora of Rajasthan, India. *Ambient Science* **7**(1) 34-35.
- Solanki Y, Kumar A, Kotiya A and Mohil P 2020, *Solanum americanum* Mill. (Solanaceae) In addition to the flora of Rajasthan: In the arid and semi-arid region of India. *International Journal of Botany Studies* **5**(2) 210- 212.
- Kotiya A, Solanki Y and Reddy GV 2020, *Flora of Rajasthan*. Published by Rajasthan State Biodiversity Board, Jaipur, Rajasthan.
- Kotiya A, Solanki Y, Singh J, Gupta S, Kumar V and Gunpal D 2021, *Solanum violaceum* Ortega (Solanaceae): A new species for Rajasthan state, India. *International Journal of Botany Studies* **6**(1) 102-104.
- Purohit CS, Jain K and Merushikha 2020, *Cucumis sativus* forma *hardwickii*-New record for Rajasthan

- with status of family Cucurbitaceae of Todgarh-raoli wildlife sanctuary, Rajasthan. *Species* **21**(68) 410-423.
20. Purohit CS 2020, *Ipomoea sagittifolia* Burm. f. - New Record for Rajasthan and Note on Family Convolvulaceae of Todgarh-Raoli Wildlife Sanctuary, Rajasthan. *International Journal of Scientific Research in Science and Technology* **7**(3) 49-65.
  21. Purohit CS 2020, New population records of an Endemic plant-*Melhania magnifolia* Blatt. & Hallb. from Todgarh-Raoli wildlife sanctuary, Rajasthan. *Species* **21**(68) 306-315.
  22. Sharma SK, Sarsavan S and Gupta AK 2022, First record of *Datura discolor* Bernh. (Solanaceae) from Rajasthan, India. *Indian Journal of Environmental Sciences* **26**(2) 105-108.
  23. Ravikumar K, Umeshkumar T, Balachandran N and Kumar NA 2022, *Tribulus ochroleucus* (Maire) Ozenda & Quezel (Zygophyllaceae) - a new addition to the flora of India. *Journal of Threatened Taxa* **14**(3) 20805-20807.
  24. Sharma SK and Sarsavan S 2023, *Datura quercifolia* H.B.K. (Solanaceae) A new record for Rajasthan, India. *Indian Journal of Environmental Sciences* **27**(1) 1-3.
  25. Kumar A, Solanki Y, Sharma SK and Kumar N 2023, *Corynandra chelidonii* var. *pallia* (Reddy and Raju) VS Raju (Cleomaceae) - An Addition to the Flora of Rajasthan, India. *International Journal of Biosciences* **23**(3) 69-74.
  26. Solanki Y, Kumar N, Meena A, Singh J and Kotiya A 2023, *Bidens bipinnata* L. (Asteraceae): A new species record to Rajasthan state, India. *International Journal of Biosciences* **23**(5) 54-59.
  27. Bhandari MM 1978, *Flora of the Indian Desert*. Scientific Publisher, Jodhpur (India).