

India's initiative, perhaps a simple box-cut article for the academic community (not merely an academic-type article) by someone like a Government officer who is responsible for this initiative, so that this piece stands as a reference for younger entrepreneurs in academia in India. A special issue of the journal can be dedicated to the 'Make in India' initiative with constructive debates to help

interested scientists in academia and industry.

1. Ghaisas, S. V. and Ananthkrishnan, S., *Curr. Sci.*, 2016, **111**(3), 451–452.
2. Aston, P. J., Mullholland, A. J. and Tant, K. M. M. (eds), *UK Success Stories in Industrial Mathematics*, London Math Society, Institute for Math and its Applications, Springer, 2016.

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World's tenth largest banyan tree at Narora in Upper Ganga Ramsar site, Uttar Pradesh, India

The king of *Ficus* species, *Ficus benghalensis* L. (Moraceae), or the banyan are large evergreen trees distributed throughout India, and also found in Bangladesh, Hawaii, Pakistan and Sri Lanka^{1–3}. The species was first described in 1753 (ref. 4) with its specific epithet *benghalensis* denoting 'Bengal', the abode of the great banyan tree of Acharya Jagdish Chandra Bose Indian Botanic Garden, Howrah, West Bengal, presently occupying 16,531 sq. m area² and standing only on nearly 2900 prop roots after having lost its mother trunk, for which it is encrypted in the Guinness World Records³.

The perennial trees of *F. benghalensis* L. serve as a keystone host species of several faunal (monkeys, snakes, birds, wasps, bats, etc.) and floral (lichens, fungi and algae) elements, as well as many other life forms and are also of use as forest fruits⁵, shelter and nesting

grounds of bees, birds, bats, etc. They are also considered sacred in several religions. During floristic surveys (2012–2016) of the Upper Ganga Ramsar site in Uttar Pradesh (UP), India, extending from Brij Ghat in Ghaziabad district to Narora in Bulandshahr district, a gigantic *F. benghalensis* tree of archaic stature, was unearthed from forest thickets in Ram Ghat region at Narora, about 8 km from the Narora Atomic Power Station (Figure 1). This tree is located on the northeastern flank of River Ganga at 28°10'38.4"N and 78°12'36"E, at 190 m amsl, the highest elevation point of this Ramsar site, and is considered sacred by the local 'jatas' as 'Siddhwari vriksha' – a wish-fulfilling tree⁶. Therefore, it is carefully guarded, surviving unscathed for over 500 years as a landmark in the Ramsar site landscape. Its main trunk of about 10.5 m perimeter is crowned with a gigantic canopy towering

about 40 m tall, with about 230 m perimeter covering about 4069 sq. m area. On the western side it possesses four pillar-like prop roots of 1–2.5 m circumference, anchoring the branches firmly to the ground. Two of these are congested near the main trunk, while the other two are farther off, supporting the westward expanding branches, while all other sides of the canopy are devoid of prop roots (Figure 2). Although all banyan trees are known to possess infinite number of prop roots², this tree, with only four one-sided prop-pillar supports of the giant canopy, is unique.

In terms of size and girth, this is the tenth largest among the world's banyan trees, the largest one being Thimmamma Marrimanu in Andhra Pradesh, followed by Kabir Vad banyan tree on the banks of the River Narmada in Gujarat^{2,7}; the Giant Banyan tree at Majhi in Lucknow (UP); the Great Banyan tree in the A.J.C.

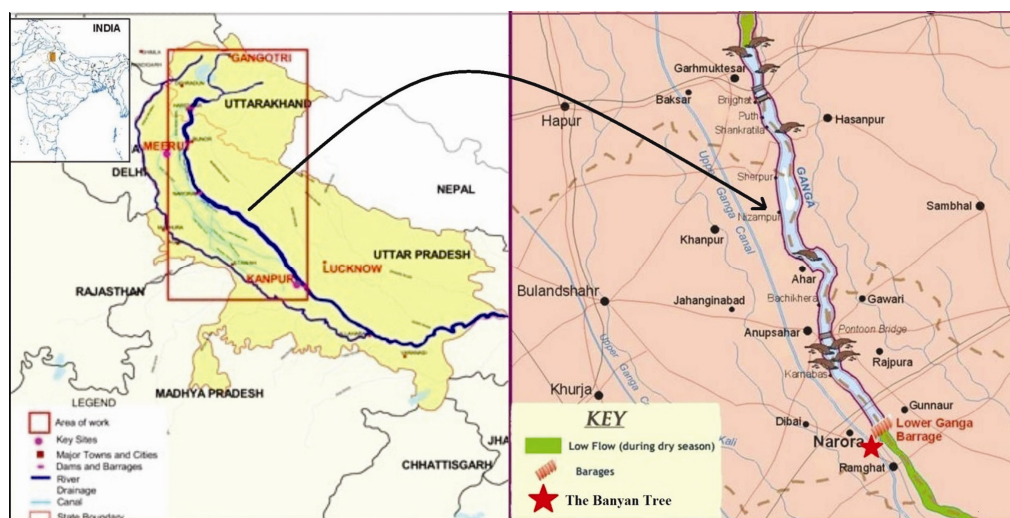


Figure 1. Map of Upper Ganga Ramsar site, Uttar Pradesh, India showing the location of the banyan tree (red star).



Figure 2. *Ficus benghalensis* L. (Inset) Drooping branches showing unilateral growth (in red) and gravitational force (in yellow); F , External force; g , Gravitational pull; m , Canopy body-mass.

Bose Indian Botanic Garden, Howrah; the Pillalamarri near Hyderabad; Dodda Alada Mara near Ramohalli, Bengaluru; Theosophical Society Big Banyan in Chennai; Ranthambore Banyan tree in Rajasthan and the Lahaina Banyan tree in Hawaii².

A recent survey revealed that the gigantic stature of this tree, manifesting the archaic botanical treasure of the Upper Ganga Ramsar site, is likely to experience detrimental demographic pressures in the near future, due to disproportionate unilateral expansion and southward drooping of its canopy, down towards the lowlands of the Gangetic river basin, from the elevated mud-mound (Figure 2), triggered by earth's gravitational pull (g). Such growth imbalance affects lateral dislocation of body-mass (m) of the tree canopy from the centre, exerting external force (F) upon the main trunk complementing Newton's second law,

$F = mg$. Once this force exceeds the 'threshold capacity' of the main trunk, it would split vertically and eventually get ruptured. Dearth of prop roots to buffer or counteract this pressure pull, makes the tree much more susceptible to the detrimental impact.

Further, the tree is getting exposed to damping sacred ethics under the impact of modernization and dwindling superstitious and religious beliefs. On the other hand, the ancestral genetic components sequestered within its pristine gene pool are also certain to possess immense breeding applications in genetic engineering and inducing resistance traits in progenies. It is therefore extremely essential to safeguard the tree against anticipated dilapidation and feared demographic adversities. An instant remedy is to furnish stout, forked bamboo supports, imitating prop roots, to the drooping branches of the tree. This would immedi-

ately mitigate F , the main detrimental pressure, cement the canopy stature and counteract devastation with an added value of revamped pristine possessions and sacred attributes of this tree.

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Corrigendum

Shangai rankings 2016: poor performance of Indian universities

Hardev Singh Virk [*Curr. Sci.*, 2016, **111**(4), 601]

This correspondence was based on the 15 June Global Ranking in Engineering & Technology. The Shanghai Rankings ARWU Report published on 15 August show overall ranking of Universities including all subjects; hence some mismatch between the two is reflected in my note also. For example, the Indian Institute of Science, Bengaluru is shown to

occupy 225th position in the Engineering & Technology Report of 15 June but it ranks 325 in the ARWU Report of 15 August. The Indian Institutes of Technology (Kharagpur, Bombay, Delhi, Kanpur and Madras) find a place in the 15 June Report but in the overall ranking (ARWU) Report of 15 August, none of the Indian IITs or Universities are ranked

among the top 500. So the overall situation of Indian Institutions is dismal compared with my report already published.

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