Role for private universities in developing higher education in India

A recent article in *Current Science*[1] put forth various aspects contributing towards the betterment of higher education in India. In this context, it is heartening to note the Indian Institute of Management, Ahmedabad becoming one of the leading management institutions, at least amongst the Asian countries. This success has been achieved in the background of prevailing limitations of school education and other administrative, political and social obstacles. Is it not possible to replicate such success in other higher educational institutions? The Government of India's new vigour and enthusiasm in supporting higher education is to be appreciated. The initiative of starting several new IITs, 5 IISERs, 14 National Universities and 16 Central Universities with lesser administrative constraints, and with an open, free and creative academic environment will undoubtedly change the horizon of higher education in the country.

In the global scenario of higher education, private universities like Harvard, Massachussetts Institute of Technology, John Hopkins and Stanford, have been leading institutions in education and research. Additionally, these institutions are successful in starting new companies based on frontier knowledge generated by the staff[1]. Now that our country is at the stage of revolutionizing higher education, it is necessary to ponder about involving mushrooming private universities and institutions into the new Indian vision. Generally private institutions in India are viewed with skepticism and contempt. Only few institutions like the Birla Institute of Technology and Science, Pilani, have been maintaining standards in engineering on par with the IITs. The current opinion of the public about private universities and institutions may be justified to some extent, but it is necessary to bring them to centre stage in order to contribute significantly to higher education. It is also necessary to realize that private institutions have additional hurdles compared to those faced by Government universities, as they need to generate funds to develop infrastructure and pay the salary of their staff, which comes from the tax-payers' money in case of government universities. Another aspect against the private universities is that they are generally prone to be compared with good government universities, while many of them are unfortunately functioning at low standards.

Recently, some private educational institutions in India have been investing significant amount of funds in courses which are of contemporary significance. Many of those managing such educational institutions are retired teachers from government institutions, who are making sincere efforts in building up these institutions. Thus, I believe that our country cannot ignore private educational institutions, as they are currently attracting a large number of students. At least initially, efforts should made to encourage sincere private institutions also to grow and contribute to the enormous task of building a large highly skilled and professional manpower. India can take equal pride when a government university reaches the standards of say, the University of California, Berkeley or a private university reaches the standards of Harvard. Unless intensive, non-restrictive and out-of-the-box approaches are envisioned and practised by the academic community, it is difficult to achieve these targets in a short time.

World rank in life sciences	University	Staff	Students
1	Harvard University (Pr)	2497 (non-medical) 10,674 (medical)	6715 (UG), 12,424 (G) and others, 20,042 (T)
2	MIT (Pr)	635 (P), 207 (Assoc. P), 166 (Asst. P), 511 (SL, EP), 160 (I)	4172 (UG), 6048 (G)
3	University of California, San Francisco	18,600	2600, 1400 (PDF)
4	University of Washington, Seattle	253 (R), 3240 (NR), 267 (PDF), 5778 (T)	3742 (G)
5	Stanford University (Pr)	1829	8186 (G)
7	Columbia University (Pr)	4000	23,000 (T)

Assoc. P, Associate Professor; Asst. P, Assistant Professor; EP, Emeritus Professor; I, Instructor; NR, Non-research; P, Professor; PDF, Postdoctoral Fellow; Pr, Private; R, Research; SL, Senior lecture; T, Total; UG, Undergraduate; G, Graduate.

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Sporidiobolus pararoseus Fell & Tallman – an antagonistic yeast with biocontrol potential

Kinnow, a hybrid mandarin (*Citrus nobilis* Lour. × *Citrus deliciosa* Tan.) enjoying a pivotal status for its production in Sriganganagar District in the northwest part of Rajasthan, India and catering to both domestic as well as export needs, has been observed to sustain recurrent post-harvest losses due to various fungal pathogens. Worldwide, consequent to public concern over pesticide residues in food and the environment, the management of post-harvest pathogens of fruits and vegetables through the application of biological agents or living fungicides has emerged as a promising option[1,2]. Hence during routine exploration of the same, a novel yeast strain of *Sporidiobolus pararoseus* was isolated from a kinnow fruit showing variable efficacy *in vitro*, inhibiting growth of *Penicillium italicum* (blue mould rot, 89.81%), *Penicillium digitatum* (green mould rot, 83.15%), *Botryodiplodia theobromae* (stem-end rot, 80.93%), *Geotrichum candidum* (sour rot, 87.22%) and *Alternaria alternata* (core rot, 53.33%) respectively. The same when evaluated for rot reduction, both by pre- and post-inoculation treatments exhibited efficacy *in vivo* as well. In general, the pre-inoculation treatment proved more effective, perhaps by out-competing post-inoculated (post-harvest) pathogen(s) for space and nutrients.

S. pararoseus is known to be mainly associated with the phylloplane of the terrestrial plants[3]. Nevertheless it has been reported from Antarctic sea water, oil-field soil and also from air atmosphere in dairy[4]. This yeast species is also known to produce killer toxins, which are proteinaceous in nature and are lethal to susceptible yeast strains. These toxins have no activity against microorganisms other than yeasts, and the killer strains are insensitive to their own toxins. Killer yeasts and their toxins have many potential applications in environmental, medical and industrial biotechnology[5–7]. Its antagonistic potential against post-harvest fungal pathogens as well as rots incited by them, thus seems to be a new record from Rajasthan. The biocontrol of various rots of kinnow fruit by this yeast strain may have commercial importance too, possibly after a large-scale testing with convenient formulations. Two bio-control products, Aspire (Ecogen, Langhorne, PA), which contains the yeast[8] *Candida oleophila* strain I-182 and Bio-Save 110 (EcoScience, Worcester, MA; formerly Bio-Save 11), which contains a saprophytic strain of the bacterium *Pseudomonas syringae*[9] are currently registered for post-harvest application to fruit.

The novel yeast strain, based on morphological and physiological characters and confirmed by molecular characterization has been designated as KFY-1 strain of *S. pararoseus* with MTCC number 8337. The culture is preserved in the microbial type culture collection and gene bank of Institute of Microbial Technology, Chandigarh, India. Further studies are in progress.

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Conservation status and distribution range of *Ixora johnsoni* Hook. f. (Rubiaceae)

Ixora johnsoni Hook. f. (Figure 1) was described by Joseph Dalton Hooker[1] in 1880 based on a single collection of Johnson in 1865 from Wennamala, Cochin. In 1915 Calder collected this species from Konni. In 1997 Dan *et al.*[2] cleared the taxonomic ambiguity regarding the identity of this species and were able to locate a few populations of this species from Mookenpetty, Kottayam District, Kerala. We conducted an exploration and were able to locate this species from a rubber plantation in Vazhoor, Kottayam District. This species is a perennial undershrub growing as an undergrowth in a small population in the rubber plantation. About 20–25 individuals were found growing together and some of them were in bloom. The detailed taxonomic description with relevant notes is provided here.

Ixora johnsoni Hook. f., *Fl. Brit. India*, 3: 139. 1880; Gamble, *Fl. Pres. Madras*, 630, (444). 1921; Mohanan, *Fl. Quilon Dist.*, 212. 1984; Hussain & Paul, *J. Econ. Tax. Bot. Addl. Ser.*, 6: 131. 1989; Mathew Dan *et al.*, *Rheedea*, 7: 73. 1997; Sasidh., *Fl. Periyar Tiger Reserve*, 177. 1998.

Perennial undershrub, 25–55 cm tall, stem erect, unbranched. Leaves opposite, decussate, simple, entire, petiolate; petiole 2.5–10 mm long, green to reddish-brown; lamina 8–25 × 4–13 cm, elliptic–obovate, cuneate at the base, mucronate at apex, lateral veins 9–12 pairs, prominent on the adaxial side, greyish-white patches radiate from the midrib; stipules interpetiolar, 5–6.5 mm long, laterally joined at the base forming a tube, broadly triangular with a central cusp ca. 2–3.5 mm long with dense golden, brownish hairs on the inner side. Inflorescence subsessile, peduncle 4–10 mm long, puberulous, bright red, with branchlets and pedicels articulated at ramifications; each unit a corymb of 10–17 flowers. Flowers sessile to shortly pediceled; pedicel 1–5 mm long, puberulous, reddish-brown; bracts to 5 mm long, reddish-brown, bracteoles to 4 mm long, reddish-brown; calyx lobes four, linear–triangular, acute at the tip, longer than ovary 5–6 mm long, puberulous, reddish-brown; corolla, white, tubular, slender, glabrous, 15–30 mm long; lobes four, 4.5–9 mm long, oblong, naked at the throat, buds with a reddish hue on the margins; stamens four attached at the mouth, alternating with the corolla lobes; filaments short 2.5–3 mm long; anthers linear, 4–5.5 mm long, beaked at the tip, bifid, mucronate at base, creamy-white; ovary two-celled,