Special issues of Academy journals

I recently came across a special issue of an Indian Academy of Sciences journal[1] which has been edited by three Guest Editors. The topic is a classical one and the special issue is aimed at focusing on emerging trends. It contains 13 papers of which only two do not have any of the guest editors as co-authors; all other papers have one or two guest editors as co-authors, and together they account for 96% of the pages. Of these other two papers, one has a co-author who belongs to the same Department as that of two Guest Editors. Further, most of the Indian contributions in the issue have originated from one institution only. Basically, therefore, this special issue is a showcase of the work done by the Guest Editors. Is this the purpose of a special issue? The normal expectation from a special issue is that the Guest Editors, who should be recognized authorities in the field, would write an overview of the field, with extensive bibliography, and the rest of the special issue would contain papers focusing on the important advances made in the field by researchers chosen from all over the world. Should any distinguished professional or a group of them wish to write about his or their own work, a research monograph would be a better forum than the special issue of a journal. In fact, I have seen many special issues in wide-ranging subjects in which the Guest Editors do not include their own work, except in the overview.

This particular special issue does not belong to my field of interest, but the deviations from expected norms are so glaring that I thought it appropriate to make a comment.

1. *Sadhana*, 2008, **33**(3), 175–356.

S. C. DUTTA ROY

Department of Electrical Engineering,
Indian Institute of Technology Delhi,
Hauz Khas,
New Delhi 110 016, India
e-mail: scdroy@ee.iitd.ac.in

Rhizobia as biofertilizers for mushroom cultivation

Mushrooms are conventionally grown with inorganic and organic nutrients added to their culture substrate. In the past, it had been reported using N balance studies that mushroom fungi such as *Pleurotus* spp. can fix N_2 biologically on natural substrates and that this might be quite commonly found among them[1,2]. However, a later study[3] showed that only associations of *Pleurotus* spp. and N_2-fixing bacteria (diazotrophs, e.g. rhizobia) can fix N_2. Microbial biofilms developed by diazotrophic colonization on the fungal filaments were observed to show nitrogenase activity, and hence increased N accumulation in the hyphae. Recently, N_2-fixing alpha-Proteobacteria were observed to be predominant in bacterial communities in truffles, a type of mushroom found in the soil[4]. Based on this knowledge, it has now been shown in Iran that rhizobia can be used as biofertilizers for increasing the harvest and nutritional quality of cultivated mushrooms more efficiently.

To prove this, sterilized plastic bottles containing processed wheat grains were incubated separately with pure mycelium alone of American oyster mushroom (*Pleurotus ostreatus*), which is the conventional practice, or the pure mycelium together with a 2×2 cm yeast manitol agar (YMA) slab containing *Bradyrhizobium elkanii*, a rhizobial strain used for soybean biofertilizers. They were incubated at 25°C until mycelial growth was completed, and then were used for spawn preparation according to the standard method. Mushroom was cultivated using the spawn, and was manually harvested 3 days after primordial initiation. The harvest was analysed for quality traits.

The pure mycelium together with *B. elkanii* increased ash, Ca, P, K and protein contents by 128%, 16%, 3%, 17% and 24% respectively, compared to the pure mycelium alone. It also increased biological efficiency and dry-matter content of mushroom by 10% and 30%, respectively, and decreased time to primordial initiation by about 7 h.

Therefore, the use of rhizobia as biofertilizers in mushroom cultivation seems to be a promising method of producing a higher yield of minerals and protein-rich mushroom more efficiently, which should be further developed for other types of mushrooms in the future. This will also increase the profit margin of the present mushroom industry.

1. Ginterová, A. and Maxianová, A., *Folia Microbiol. (Prague)*, 1975, **20**, 246–250.
2. Rangaswami, G., Kandaswami, T. K. and Ramasamy, K., *Curr. Sci.*, 1975, **44**, 403–404.
3. Jayasinghearachchi, H. S. and Seneviratne, G., *J. Biosci.*, 2004, **29**, 293–296.
4. Barberi, E. *et al.*, *Environ. Microbiol.*, 2007, **9**, 2234–2246.

GAMINI SENEVIRATNE[1,4,*]
GHOLAM-ALI PEYVAST[2]
JAMAL-ALI OLFATI[2]
ARMIN KARIMINIA[3]

[1]*Institute of Fundamental Studies,*
Hantana Road, Kandy, Sri Lanka
[2]*Department of Horticulture and*
[3]*Department of Soil Science,*
University of Guilan, Km 6 Qazvin Road,
Rasht, Iran
[4]*Present address:*
Faculty of Agriculture,
Food and Natural Resources,
The University of Sydney,
Sydney, NSW 2006, Australia
**e-mail: gaminis@ifs.ac.lk*