well, and make sure that all other jobs, including those of scientists, have substantially lower salary and perks. Even scientists who occupy high administrative jobs in the Government fail to project the case of their fellow scientists. However, while the scientists have to survive with whatever scale the Government prescribes, they can at least demand a respectable honorarium for every additional job they are requested to undertake. By refusing to do such a job for free or for a pittance would not make them poorer; on the other hand, the message will be clear that they need to be taken more seriously and more respectfully. It is important for a scientist to live with dignity; one who does not care for it does positive disservice to himself and to the whole scientific community.

1. Chaturvedi, U. C., *Curr. Sci.*, 2008, **95**, 433.

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

Biofuels: concern about substrate selection

The search for suitable sources of biomass for generation of biofuels is actively going on in different parts of the world. Biomass being a renewable source of energy is seen as a long-lasting and sustainable solution to the energy crisis. In this context, USA is diverting substantial part of its corn to produce bioethanol[1]; Brazil is extensively using sugarcane[2]. In a similar manner every country can look for the suitability of biomass depending upon its geographical position, energy needs and abundance of biomass. In India, we have a lot of forest residue, agricultural residue, wild grasses, non-fodder crops, etc., which may be diverted to the biofuel programme. But a thoughtful selection of the biomass is required as it should not hamper our ecological balance.

Diverting lignocellulosic biomass, especially agricultural and forest residues, towards the biofuel programme may have a serious implication for the ecosystem, and it should be well thought of before the operation begins on a large scale. Residual plant biomass contains organic compounds: sugars, starches, proteins, carbohydrates, lignins, waxes, resins and organic acids, and the mineralization process converts these organic compounds to the relatively stable substance that is humus, which feeds the soil population of microorganisms maintaining high and healthy levels of soil life[3]. This humus is a life force of the soil. It makes the soil fertile as it is mineral-rich, improves aeration and adds growth-promoting chemicals. Diversion of a huge quantity of residual plant biomass towards biofuels may lead to lesser humification followed by a negative impact on the population of indigenous microflora, subsequently disturbing the biogeochemical cycles. So substrate selection should be carefully planned without hampering the ecological balance. In the Indian context, municipality solid waste like waste from large vegetable and fruit markets (market organic waste), waste from private homes and biodegradable industrial waste should be preferred over forest and agricultural residues for the biofuel programme.

Due to the large volume of biodegradeable industrial and municipality waste, landfills are becoming increasingly expensive and stringently regulated. Instead of burying this waste in landfills, it can be diverted for the production of bioenergy, thus serving two purposes: environmental sanitation and biofuel generation. There have been a number of reports on the utilization of this type of waste as feedstock for bioenergy production, especially in the form of biogas[4,5]. The biogas produced can be used for generating electricity and in dual-fuel internal combustion engines.

1. Pimentel, D. and Patzek, T. W., *Nat. Resour. Res.*, 2005, **14**, 65–76.
2. Martines-Filho, J., Burnquist, H. L. and Vian, C. E. F., *Choices*, 2006, **21**, 91.
3. http://en.wikipedia.org/wiki/Humus
4. Alvarez, J. M. and Llabres, P., *Bioresour. Technol.*, 1992, **39**, 39–48.
5. Alvarez, J. M., Llabres, P., Cecchi, F. and Pavan, P., *Biol. Wastes*, 1990, **33**, 181–199.

SUDHIR SYAL*
MAMTA KUMARI

Department of Biotechnology and Bioinformatics,
Jaypee University of Information Technology,
Waknaghat,
Solan 173 215, India
**e-mail: sudhirsyal@rediffmail.com*

Natural groundwater recharging ponds: struggle for survival

Groundwater abstraction has drastically increased during the last few decades in order to fulfil the needs of the domestic, agricultural and industrial sectors. Due to this increased abstraction, out of the 5711 blocks in India, 310 have come under the 'over-exploited' category, whereas 160 have reached the 'dark' category[1]. Rainfall is the only source of groundwater recharging, which is also declining as concluded from the analysis of the last three decades of rainfall data. Moreover, approximately 80% of the yearly rainfall is concentrated in three months of the year (mid-June to mid-September), of which considerable portion gets converted into run-off. If the current situation continues, the day is not far when water will

not be accessible to all. If scientists and other organizations involved in the water business are asked for the technique to arrest the declining water table, they will all answer in a single voice: 'artificial groundwater recharging'. No doubt, artificial groundwater recharging has now been accepted worldwide as a cost-effective technique. But this technique requires a proper set-up and good knowledge to maintain it. Moreover, what is the adoption status of this technique? We all know this bitter truth. Will a few structures installed by Central and State Government bodies serve the purpose? In order to adopt artificial techniques of recharging, probably we have forgotten the traditional groundwater recharging systems (i.e. natural ponds). Land value is the main cause of the extinction of natural ponds in the cities, but in villages they still exist. In earlier times, these ponds were used to store run-off and as a drinking and bathing facility for animals. The stored water slowly infiltrates and eventually recharges the groundwater. From the dried bed of the pond, deposited silt was removed for various uses. This process helps in reviving the infiltration capacity and storage volume of the pond for the coming year. But during the last few decades, urbanization has played a major role in changing the socio-economic conditions of the villagers. Availability of all basic facilities at home have made the villagers abandon these ponds. In fact, the ponds have now become garbage bins and sewage ponds as the inflow now includes detergent and soap water from bathrooms, oily and solid waste from kitchens and dung-laden water from animal sheds. Storage of cow dung on the banks of these ponds is a common practice. Accumulation of these solid wastes reduces the infiltration capacity and storage volume of the ponds. What will be the effect of this polluted water on the aquifer underneath?

A pond in good condition serves both the purpose of storing water and recharging groundwater (Figure 1). It requires cleaning once a year before the onset of monsoon. Why are the Central and State Government organizations dealing with groundwater not thinking in this direction? Why do we not learn from the movements run to clean Sukhna Lake in Chandigarh and Dal Lake in Kashmir? Why are we ignorant to the poor state of our own village assets? It is the present-day need to make villagers aware about the functions and benefits of clean ponds. Panchayats and college/school teachers of the concerned villages are the best-suited for this purpose. Generally, ponds are considered as a village property; hence, Panchayats can enforce strict policies to maintain them. Thus, we have to safeguard these natural groundwater recharging bodies to assure the sustainability of our water resources.

Figure 1. Photograph of a well-managed pond. (Inset) Run-off outlet from upper catchment.

1. www.indiaagristat.com, Government of India, 2008.

A. K. VASHISHT[1,*]
S. R. VASHISHT[2]

[1]*Department of Irrigation and Drainage Engineering,*
G.B. Pant University of Agriculture and Technology,
Pantnagar 263 145, India
[2]*Village Kharar Achharwal,*
District Hoshiarpur, Punjab
**e-mail: akvashisht74@yahoo.com*

Some taxonomic inaccuracies in conservation publications

Citing literature is the usual practice in publications and it is necessary to high light new findings or substantiate claims[1–3]. In a recent paper, Gunawardene *et al.*[4] cited papers to substantiate what they intended to convey, one on flora[5] and the others on fauna[6,7], but in many cases incorrectly. The article is a literature survey on the Western Ghats–Sri Lanka biodiversity hotspot, highlighting the need for more comparative as well as collaborative studies between Sri Lanka and the Western Ghats, and giving evidence from recent studies[2,4]. It is unfortunate that non-taxonomists, such as conservationists, unwittingly misrepresent research findings from taxonomy, resulting in misleading analyses of biodiversity and incorrect conclusions about conservation, an issue which has not been addressed in taxonomic discussions[8–11].

Gunawardene *et al.*[4] have referred to a report of five species of mosses[5] from Sri Lanka as follows: 'A collection in the uplands of Sri Lanka in 2002 revealed five new species of mosses, suggesting that further investigation into less accessible montane ecosystems may yield additional new species'. In fact, the five moss species reported by Tan[5] from Sri Lanka were previously known species; they are new records for Sri Lanka, not new species.

Likewise, Gunawardene *et al.*[4] reported the discovery of a frog belonging to an ancient Indo-Madagascan lineage as a new family and genus from the Western Ghats[6] stating: 'Recently, a spectacular new species of frog, the purple frog (*Nasikabatrachus sahyadrensis*) has been discovered in the southern Western Ghats. It represents a new genus of frog *Nasikabatrachus* of an ancient Indo-Madagascan line; recent studies show that the frog belongs to an already known family Euglossidae'. Actually, Biju and Bossuyt[6] (in a high-impact journal which has been cited widely within conservation science[12,13]) concluded, based on molecular clock analyses, that this unique frog species diverged from the Seychellean endemic frog family Sooglossidae about 130 million years ago and created a new family Nasikabatrachidae. Frost *et al.*[14]