mulation of recombinant proteins in edible plant tissues and feasibility including economics of such approaches are being made. These investigations generate a hope towards developing low-cost edible vaccines from plants that are commonly available, compared to expensive recombinant vaccines. In order to be applicable to large section of population in a edible and un-cooked form (to ensure, there is no denaturation), production of vaccines in candidate crops like banana can be invaluable to many tropical countries in the developing world where these are grown, richly available at lower costs and consumed as staple food.

1. Mason, H. S. and Arntzen, C. J., *TIBTECH*, 1995, **13**, 388–392.
2. Lyons, P. C., May, G. D., Mason, H. S. and Arntzen, C. J., *Pharma News*, 1996, **3**, 7–12.
3. Mason, H. S., Lam, D. M. K. and Arntzen, C. J., *Proc. Natl. Acad. Sci. USA*, 1995, **92**, 3358–3361.
4. Mason, H. S., Ball, J. M., Shi, J-J., Xi, J., Mary, K. E. and Arntzen, C. J., *Proc. Natl. Acad. Sci. USA*, 1996, **93**, 5335–5340.
5. Richter, L., Mason, H. S. and Arntzen, C. J., *J. Travel Med.*, 1996, **3**, 52–56.

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SCIENTIFIC CORRESPONDENCE

Assessment of plant bio-diversity at Kalakad–Mundanthurai

T. Ganesh *et al.* (*Curr. Sci.*, 1996, **71**, 379–392) have generated interesting phytosociological information for the Tiger Reserve in the Agasthyamalai range.

While highlighting the importance of quantitative analysis in an area of 3.82 ha, the pioneering work of Champion[1] and Puri *et al.*[2] is referred to as based on qualitative criteria such as physiognomy and dominant species, ignoring quantitative data.

Champion's treatise on the vegetation types came out in 1936, later on revised by Champion and Seth in 1968 (misquoted as 1936 in the reference). This study covered the entire sub-continent. The idea was to come out with a classification good for the country as a whole, with spot descriptions. Significantly, Champion chose to call his *magnum opus* 'a preliminary survey'. Had he confined himself to small plots with quantitative statistics, the concept of which barely existed in his time, perhaps, the publication would not have yet seen the light of the day.

Contribution of Puri *et al.* of a later date (1983) relies on the vegetation maps of the French Institute at one millionth scale based on the criteria of dominance–abundance–fidelity of species. The series recognized for the Kalakad–Mundanthurai region is *Cullenia–Mesua–Palaquium*. It is within this series that the quantitative study has established *Cullenia–Alagaia–Palaquium* sub-type considering an area of 3.82 ha.

The question is for how large an area would this sub-type remain valid, latitudinally and altitudinally? How many sub-types founded quantitatively go into one series, viz. *Cullenia–Mesua–Palaquium* of the southern part of the Western Ghats? How many hundreds (or thousands) can be counted in Peninsular India? What is good for a 4 ha study carried out in considerable detail may not be manageable at the level of the sub-continent. The question of scale should not be lost sight of.

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Reply by T. Ganesh et al.:

We recognize the pioneer and monumental contributions of Champion[1] and Puri *et al.*[2] to the description of forest vegetation in India, but reiterate that plant ecologists in India must move beyond qualitative description of vegetation, particularly in light of the current need for assessment and monitoring of biodiversity. Our paper represents an effort towards quantification of tree diversity in an area that is poorly known, but has a high level of biodiversity. Incidentally, Meher-Homji and his colleagues, notably Pascal[3] from the French Institute, themselves have been pioneers in collecting quantitative data on the distribution of tree species in plots throughout the Western Ghats.

We also wish to point out that the 3.82 ha that Meher-Homji refers to is a sub-sample of an area over 100 ha. Nevertheless, his question for how large of an area would this sub-type remain valid is an appropriate one. Although we recognized the forest type as *Cullenia–Aglaia–Palaquium* type, we did so in the context of types and sub-types established by Champion and others. We now feel that the concept of types and sub-types based on dominance of certain species is of limited utility, and may not be valid in many cases. Plant communities change over time and space. The static description of vegetation does not capture the dynamics of natural communities. Understanding dynamics is key to long-term conservation of biodiversity. In fact, one of the points of our paper is that our results do not conform to the vegetation described for the area because the vegetation is expected to vary over small spatial scales. Therefore, quantitative studies are required to document patterns of diversity and long-term monitoring is essential to understand dynamics. Regrettably, in trying to make our point about changes in community structure over space and time, we fell into the trap in claiming the existence of another sub-type. Thus, we are very grateful to

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Manuscripts should be typed double-spaced on one side of white bond paper (21 × 28 cm). The pages should be numbered consecutively, starting with the title page and through the text, reference list, tables and figure legends. The **title** should be brief, specific and amenable to indexing. Not more than five **keywords** should be indicated separately; these should be chosen carefully and must not be phrases of several words. **Summary** and **abstract** should not have more than 100 words and should convey the main point of the paper, outline the results and conclusions, and explain the significance of the results.

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Figures. In the case of line drawings one set of originals (without any lettering) is sufficient, with two copies containing lettering. In the case of photographs good prints are required with each copy of the manuscript; photocopies are not acceptable. Line drawings should be roughly twice the final printed size. The correct orientation should be indicated if not clear.

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References should be numbered in the order in which they appear, first through the text and then through table and figure legends. The following are examples of ways of writing references.

1. Mukundan, T. and Kishore, K., *Curr. Sci.*, 1991, **60**, 355–362.
2. Constantine. G., in *Biology of Bats* (ed. Wimsatt. W. A), Academic Press, New York. 1970. vol 1, pp. 319–322.

Acknowledgements should be brief. Footnotes are not allowed except to identify the corresponding author if not the first.

Cover photographs. Good photographs (colour or black and white) that pertain to a submitted paper will be considered for use on the cover. Good *prints* and a legend should be submitted with the manuscript. In the case of a colour picture, a transparency will be required for printing if accepted.

PROOFS AND PUBLICATION

Two sets of galley proofs are sent to the corresponding author. A reprint order form accompanies the proofs.

Meher-Homji for providing an opportunity to not only clarify the points raised, but also to state our position concerning vegetation types.

1. Champion, H. G., *Indian For. Rec.*, 1936.
2. Puri, G. S., Meher-Homji, V. M., Gupta, R. K. and Puri, S., *Forest Ecology*, Oxford & IBH, New Delhi, 1983, vol. I.
3. Pascal, J. P., *Wet Evergreen Forests of Western Ghats of India: Ecology and Structure Floristic Composition and Succession*, French Institute, India, 1988.

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Electrostriction effect and solvent engineering

Anil Kumar on application of ion–solvent interaction and thermostability of DNA duplex in ionic solution (*Curr Sci.*, 1996, **71**, 289) highlights many important findings which bear relevance not only to DNA but are very much true for proteins and enzymes. The kinetic data presented clearly explain the thermostability acquired by DNA in ionic solution. Interestingly, similar role of electrostriction effect is indicated from several reports on enzyme stability by soluble additives, e.g. salts, sugars and sugar alcohols.

Nowadays the area of thermostability of enzymes is a challenging field for chemists, biochemists, biotechnologists and industrial microbiologists. Lot of work has been directed to achieve this by stabilization of native confirmation of protein in aqueous environment. T_m of lysozyme and ribonucleases and many other enzymes has been raised using sugars and polyols. Thermolabile enzyme preparations have been stabilized by high ionic strength solutions. The role of viscosity, intensification of the intramolecular hydrophobic interaction within the protein reduced volume and increased surface tension has been advocated in protein solvent and additive interactions[1].

The possible role of electrostriction (ES) effect leading to a hydrophobic environment in an aqueous system in enhancing the shelf life of enzyme, altering substrate specificity and rate of reaction, opens up new vistas in solvent engineering of enzyme mediated reactions.

1. Gupta, M. N. (ed.), *Thermostability of Enzymes*, Narosa Publishing House, New Delhi, 1993.

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Anil Kumar replies:

Gupta and Saxena have offered valuable information on the role of electrostriction in explaining several biological processes. We often stress, in the seminars and symposia about effective and fruitful collaboration among biochemists, microbiologists and biophysicists. The time has now come that we, in India define the areas of collaboration and intensify collective efforts to work on the solvent engineering of enzyme-mediated reactions.

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Dengue haemorrhagic fever epidemic in Delhi

Dengue was endemic in India, but dengue haemorrhagic fever (DHF) is of recent origin, first reported[1] from Calcutta in 1963. Since then DHF and dengue shock syndrome (DSS) have been occurring in India sporadically and entering urbanized and industrialized settlements. DHF/DSS epidemics have also been reported from purely rural villages in Maharashtra, Karnataka, Tamil Nadu, Delhi, etc. Urbanization and rural water supply are the principal reasons for *Aedes* dispersal. So far there have been 70 reported outbreaks in the country and the 1996 epidemic was preceded by 6 outbreaks in Delhi. All four serotypes (Den-1, Den-2, Den-3, Den-4) occur in India. In the 1996 epidemic Den-2 virus has been isolated by Pradeep Seth at the All India Institute of Medical Sciences, New Delhi and Kalyan Banerjee at the National Institute of Virology, Pune. The epicenter of DHF was south Delhi affecting all communities, and later cases were reported from almost all localities. In this epidemic beginning in August, the government has reported 8900 cases and 375 deaths due to DHF. Reported cases may be the proverbial tip of the iceberg. Dengue fever and deaths are also being reported from neighbouring towns in Haryana and Uttar Pradesh. Dengue now occurs across the country with increasing reports of DHF/DSS. Army's help was sought, but ironically deaths and large number of admissions due to DHF were also reported from the New Delhi military hospital. The epidemic has receded with the onset of winter but DHF is known to become endemic, and might resurface periodically. In Delhi *Aedes aegypti* breeds profusely with larval index from 20 to 40 or more in many