Nepal earthquake, effect in Bihar and 85°E ridge

The Nepal earthquake with its epicenter very close to Kathmandu (27.7°N, 85.33°E) has caused much damage and casualties in northern India, particularly in Bihar. A closer examination of effect in Bihar shows up an interesting pattern. This is because the locations in Bihar (like Sitamarhi, Chhapra, Motihari etc.), where seismic energy seems to have been felt more, appear to lie within a corridor (of about 100 km) across the 85°E ridge. Now this ridge has been reckoned as the trace of the Crozet mantle plume and manifests in the Indian Ocean as the Nikitin–Afanasy sea mounts. The northern extension of this ridge seems to reach quite close to Kathmandu. It may be noted that the ridge may not be a geometrical line owing to the curved path of India's northward movement during past nearly ~130 My.

Such structures due to their elastic characteristic are likely to act as some sort of a wave-guide which would facilitate the propagation of seismic energy and hence places falling within their periphery could be more vulnerable.

It now appears that many such transverse structures (ridges/faults) not only enter into the Himalayan region, but even further north. The logic for it comes from a well-accepted result that has emerged during the past 2–3 decades from the deep seismic probing in Tibet. According to it, the Indian lithosphere has penetrated under the Eurasian plate reaching up to the southern Tibet. Hence the old structures within the Indian plate are also likely to reach there, although under the new thermo-tectonic situations these might have been modified. It will be interesting to study this aspect. The possible presence of structures transverse to Himalaya within the structures parallel to Himalaya would form lateral heterogeneities which may have significant role in accumulation/release of stress.

An understanding of the possible coupling (as noted above in the case of 85°E ridge and disasters in Bihar) of the structures parallel to the Himalaya (such as Main Frontal Thrust, Main Boundary Thrust, Main Central Thrust and Indo-Tsangpo suture) and those transverse to it (such as 90°E, 85°E, Munger–Saharsa ridge, Delhi–Aravalli ridge, etc.), could be useful in studying the influence of energy of the Himalayan earthquake into the northern parts of India. The faults at or close to the boundaries of these basement ridge structures may characterize higher degree of vulnerability. Of course vulnerability has two aspects – one is the degree of shock due to seismic energy and the other is the quality of construction, which if poor/less resistant – may make the structures give way even at lesser energy levels.

UPENDRA RAVAL

2-1-49/19/c, Street No. 11,
Suryanagar Colony, Uppal,
Hyderabad 500 039, India
e-mail: upen0106@gmail.com

A rare incident of tricotyledony in *Cleome viscosa* L.

Tricotyledony, referred to the presence of three cotyledons in dicotyledonous plants, is a rare phenomenon sporadically present in a few angiospermic families. Till date it is reported in *Acacia mellifera*, *Butea monosperma*, *Emblica officinalis*, *Hippophae rhamnoides*, *Withania somnifera*, *Brassica oleracea* var. *Capitata*, *Crotalaria juncea* and *Raphanus raphanistrum*[1,2]. Here we document the presence of tricotyledonous seedlings in *Cleome viscosa* L., a pantropical weed. It is distributed throughout the tropical and sub-tropical regions of the world including India. However, its status has now been changed to economic crop with its upliftment in the applied areas of food, medicine, pharmaceuticals, agriculture, biodiesel and nanotechnology[3].

The plant starts its life with the seed germination phase which is profuse with the onset of monsoon rains. In a rare incident, a single tricotyledonous seedling (Figure 1 *a*) was observed in a lot of 30 seeds kept for germination on the moist sand under laboratory conditions. Similarly, a tricotyledonous seedling (Figure 1 *b*) was found growing in the experimental beds. It survived only for two weeks. With this finding the species can now be included in the already existing list of tricotyledonous species. Greater emphasis will be laid on the extensive screening of the natural populations for these seedlings during the next season.

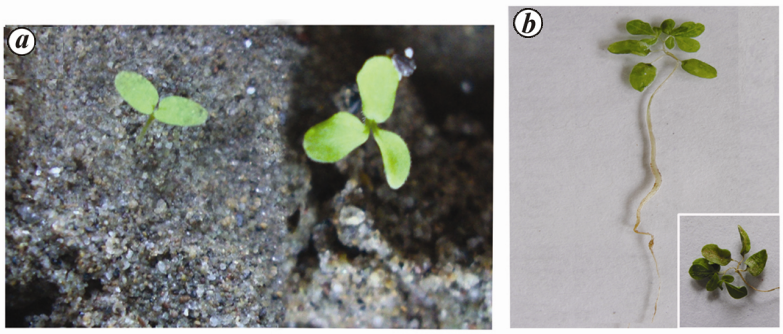

Figure 1. Seedlings of *Cleome viscosa* bearing di- and tri-cotyledonary leaves (***a***) and a plantlet with tricotyledonary and a pair of true leaves (***b***). Enlarged views in insets.

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SHVETA SAROOP*
VEENU KAUL

Department of Botany,
University of Jammu,
Jammu 180 006, India
e-mail: shvetasaroop@gmail.com