

honey bees for pollination of crops. At present, there is a standard requirement of over 150 million honey bee colonies in the country for the pollination of entomophilous crops and, in addition, they can produce over 2.25 million metric tons of honey. In 1982, there were 0.6 million honey bee colonies in the country⁶. Later Indian hive bee (*Apis cerana indica*) was badly affected by the Thai Sac Brood Virus (TSBV) disease⁷. This has caused a great loss to the bee-keeping industry in the country, as majority of the colonies of the Indian honey bee were lost by the start of the 1990s. The Indian Council of Agricultural Research, honouring the recommendations of the National Commission on Agriculture (1976), sanctioned an 'All India Coordinated Project on Honey bee Research and Training' in the early 80s. This project was implemented at many centres across the country. Though some work was carried out under this project, the overall achievement of the project remained highly unsatisfactory. The project failed to provide a right direction to honey bee

research in the country. No specialized laboratories for honey bee breeding, management, nutrition, pathology, toxicology, pollination, etc. could be developed, even in a time span of over 20 years. The country, therefore, badly failed even to make its presence felt on the world honey production scene, as has been done by countries like China – the major honey exporting country in the world. At present, the estimated number of honey bee colonies in the country remains even less than 0.5 million against a fixed target of 6 million, and a potential of 150 million colonies⁶. There is a long way to go to achieve the required target and potential. In the absence of the required number of honey bee colonies, much of the floral resources in the country are going waste, in addition to losing the benefits of cross-pollination of crops. Therefore, there is an urgent need to recognize bee-keeping as an input in agriculture. For this, honey bee research in the country should be given top priority and specialized honey bee research centres should be established across the coun-

try. This will help in raising the number of honey bee colonies in the country so that, like other inputs, bee-keeping in agriculture is also well utilized.

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The need for a National Institute of Seismology

Nirupa Sen¹ had recently elaborated the DST plans for earthquake management and research. A coordinated Himalayan Seismicity Programme has been started and funded by DST since 1982. After the Latur earthquake of 1993, peninsular India was also included in the DST programme. However, there is one limitation; all the DST plans and programmes in seismology are funded as projects and not on a permanent basis. The major player in executing the plans of the DST is India Meteorological Department (IMD), which is responsible for running and maintenance of seismological observatories in India on a permanent basis. A national seismological network has been planned by IMD for monitoring microseismicity and preparing microzonation maps of earthquake-prone areas. Unfortunately, like any other government department, IMD is also plagued by inefficiency and bureaucratic hurdles. Our own seismic observatory at Amritsar is also included in the national network, but nothing concrete has happened during the last two years.

The frequency of occurrence of earthquakes has increased at an alarming rate during the last decade. Five major earthquakes of magnitude 6.0 or more on the Richter scale have occurred in Uttarkashi (1991), Latur (1993), Jabalpur (1997), Chamoli (1999) and Bhuj (2001). According to Roger Bilham², the Himalayan belt will experience five to eight major quakes during the present century to release the accumulated stress at the boundary of the Indo-Tibetan collision zone. The proposal of IMD to set up an Earthquake Evaluation Research Centre (EERC) is welcome, but considering the present scenario of enhanced seismic activity in India, it will be most appropriate to set up a National Institute of Seismology and Disaster Management³ on a turn-key basis. This institute should have experts from earth sciences, structural engineers, town planners, architects and social scientists, headed by a seismologist. It should employ international experts on disaster management on its

faculty. It is true that earthquake prediction may not be possible in the near future but monitoring of seismic activity, evaluation of seismic data, preparation of seismic zonation maps of earthquake-prone areas, training of manpower, involvement of NGOs and creation of awareness among the public about natural disasters and their mitigation should be on the agenda of the national institute.

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