

In this issue

Professional Competence

Teachers in agricultural education

India is primarily an agrarian society where more than 60% are directly involved with agriculture. To serve the needs of this majority, there are 64 State agricultural universities, 4 central agricultural universities and 4 deemed universities. Besides, there are 4 central universities with agriculture faculty. About 650 agricultural colleges extend the reach of the universities. The existing system of agricultural education in India has nearly 20,000 faculty specialising in 90 different disciplines.

Researchers from the ICAR-National Academy of Agricultural Research Management, examine the issue of teacher traits and competencies needed for the changing realities of agriculture in India, with the explicit purpose of integrating these factors into the National Eligibility Test of ICAR.

The General Article in this issue is a wakeup call to other bodies that conduct eligibility tests that consider only the subject knowledge of potential aspirants for appointment as teachers. The article is useful not only for agricultural teachers, but university and college teachers too in general. Turn to **page 356** now.

Electrical Signature

Cyclonic storm Phailin

Storms are often associated with lightning discharges. In severe cyclonic storms, this is exaggerated. There are instruments aboard satellites that can detect these transient changes in lighting and even capture images of lightning. But these instruments do not operate on continuous mode and so they cannot help us understand the dynamics that relate the lightning to the intensity of the cyclone and the path it takes.

But now there is a network of ground-based lightning detection that can give us real time data. Lightning

emits very low frequency electromagnetic energy. The Global Lightning Detection network can even help us estimate the time, location, discharge polarity and radiated peak current of lightning discharges.

Researchers from the Indian Institute of Geomagnetism, Allahabad and the Doon University, Dehradun took the data on the cyclone, *Phailin*, from the Cyclone Warning Services of the IMD, infrared imagery data of the Kalpana-1 satellite and data from the Global Lightning Detection network to correlate the dynamics of the severe cyclone with the electrical activity.

Early morning on 8 October a depression developed in the Bay of Bengal. By 9th afternoon, it developed into a cyclone and by the 10th it became a severe cyclonic storm. On 11th morning, it reached maximum intensity, to be categorised as very severe and the eye of the storm became clearly visible.

On the 10th, day it became severe, the cyclone had more than 2000 lightning events. In a Research Article on **page 421**, read about the interplay of cloud to ground and ground to cloud discharges and gain insights on the relationship between the intensity of the cyclone and electric discharges inside it.

Way Forward in Wayanad

Conserving Asian elephants

Wayanad is the least populated district in Kerala, with a population density of less than 400 people per square kilometre. About 40% of its area is covered by forests. A haven for the Asian elephant, tiger and wild dog. A biodiversity that attracts tourists and ecologists alike.

Past migrations into the district, use of fire to open up the forest to fight against malaria, replacing forests with plantations of tea, coffee, cinchona and hardwood trees for economic benefits and opening up highways and roads in the name of

development have now fragmented the forests.

Wild life is threatened. Invasive plants have replaced the greenery. Crop damage by wild life, human-elephant conflicts and even deaths have increased.

Researchers from the Ashoka Trust for Research in Ecology and the Environment and the Manipal Academy of Higher Education present a Review Article on **page 362** in this issue on the current status of conservation issues and suggest the way forward in the future management of Asian elephants and their habitat in Wayanad.

Malabar Neem and Pearl Millet

Profitable agroforestry

Malabar neem, *Melia dubia*, is the timber tree. And the leaves are used as fodder. Since it grows well in most parts of India, except in the Himalayan tracts, it has been recommended for intercropping with ginger, banana, groundnut and even sugarcane. However, agroforestry is considered to be not very profitable since it reduces the crop yield.

In a Research Communication in this issue, researchers show that it can be profitable when *M. dubia* is intercropped with pearl millet. Though the productivity of pearl millet does go down, with the right agroforestry practices, the yield from *M. dubia* can more than make up in terms of returns from timber, making the combination economically attractive.

Malabar neem is a fast growing tree – meaning it fixes carbon fast. And pearl millet is a C3 plant, known for its ability to fix carbon. So besides providing food, fodder and timber, the combination of the two can help sequester carbon to meet national goals, argue the authors. Turn to **page 444**.

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