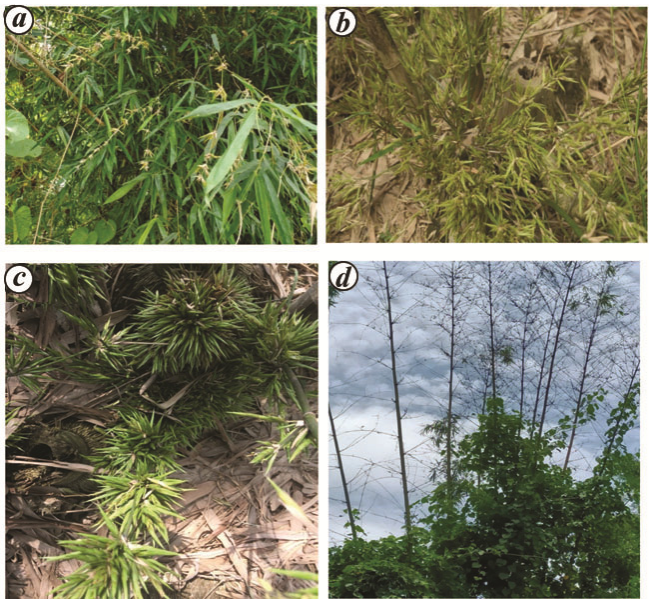

Figure 1. ***a–c***, Flowering in *Bambusa nutans*. ***d***, Drying of clumps.

period (Figure 1 *a–c*). After flowering, 2–3 clumps started drying and finally died within a few months, which were then warped by climbers (Figure 1 *d*). In rest of the clumps flowering is continued in some of the branches during the study period. During our repeated visit to the bambusetum, flowering was observed on the branches and also on the ground. However, none of these produced seeds, as no new seedlings were observed in and around the clumps. Flowers of the species were reported producing sterile seeds as also observed in the bambusetum[6]. The species is thus being propagated through vegetative means with below 50% success. Conservation of the species is difficult in natural conditions due to lack of fertile seeds and low rooting in vegetative propagation. The present report thus recommends research efforts to study physiology and breeding principles of *B. nutans* to its conservation through the production of seedlings either by producing fertile seeds or enhancing rooting in the vegetative propagules.

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Locusts plague: an emerging threat to India

While India is still battling with the health and economic crises due to the COVID-19 pandemic, an emerging threat in the form of invasion by locusts might further jeopardize the food security and agricultural economy of the country. Locusts, the oldest global migratory pests, have been dreaded in the past and are devastating even today. They sometimes display a solitary lifestyle of a grasshopper (Acridoidea); however, under favourable environmental conditions – moist soil and sprouting vegetation after heavy showers – locusts gregarize and form enormous swarms of ~1 km^2 size[1]. An average swarm of 40 million voracious locusts can migrate over large distances, even spreading across regions, and cause serious agricultural damage by devouring crops enough to feed about 35,000 people in a day[2]. This year the threat is due to the desert locust *Schistocerca gregaria*, the most notorious and devastating locust species.

Desert locusts directly threaten the food security of a country, besides livelihoods, environment, and economic development[3]. The world is facing one of the worst locust plagues in decades, with maturing populations of desert locusts along the southwestern coastal plains of Iran and Sistan Baluchistan region[4]. While the threats are increasing in Southwest Asia and the Sahel, by May 2020 FAO had appealed for USD 311.6 million to curb the locust storm in the Horn of Africa, and Yemen. Experts suggested that the change in cyclonic patterns over the Arabian Sea has caused the recent locust invasions in East Africa and Southwest Asia[5]. In February 2020, Pakistan declared the locust infestation as a 'national emergency' given its harrowing impacts on food security in terms of the loss of 40% of its food crops[5]. Soon, the Ministry of Environment, Forests, and Climate Change (MoEFCC), Government of India reported that the locust swarm had entered the country from Pakistan (Figure 1). This outbreak has been causing major damage to standing cotton crops and vegetables in the Central and western states of India, including Rajasthan, Punjab, Haryana and

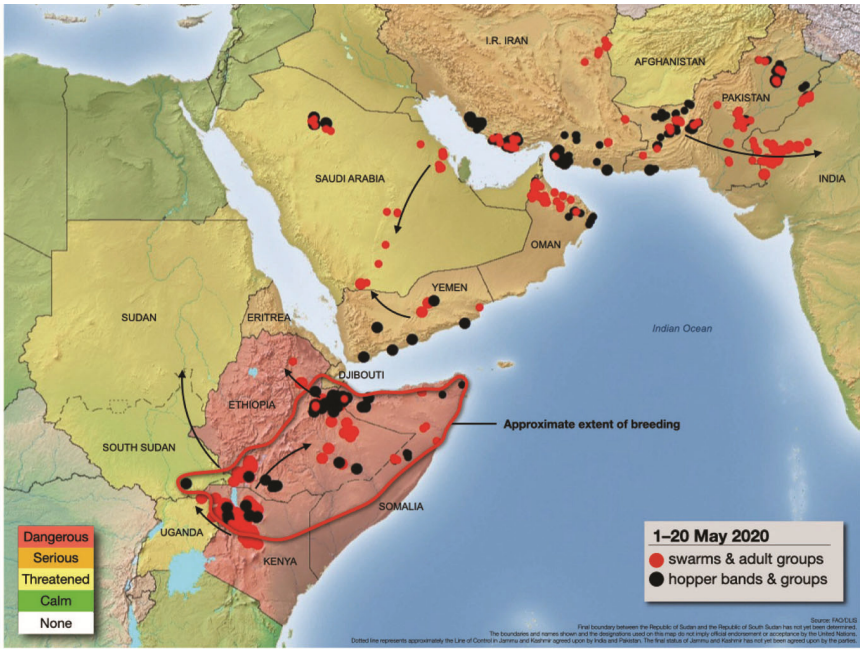

Figure 1. Route of desert locust outbreak in East Africa, Yemen and Southwest Asia (source: http://www.fao.org/ag/locusts/en/info/info/index.html).

Madhya Pradesh, with Rajasthan being the most affected. India has experienced such massive locust invasion after two decades, and any failure to control the swarms could lead to severe consequences on agricultural production, ultimately affecting the food security and agricultural economy of the country.

This year, the locust wave has entered India earlier than the normal time of June and July, which might be attributed to their changing behaviour in the light of climate change. Changing climatic conditions characterized by frequent unusual heavy and transitory cloudbursts may further facilitate locust outbreaks by supporting favourable breeding conditions[5]. FAO has warned that the India–Pakistan region would experience greater swarms in the coming weeks as locusts fly across the Indian Ocean from the Horn of Africa[4]. Such a massive locust plague will most likely have catastrophic consequences on agriculture, when food security is already paramount[4]. Countries like Iran, Pakistan and India have adopted the widespread application of malathion (an organophosphate insecticide) in the affected areas to control the devastating locusts, as recommended by FAO. Although malathion has shorter environmental persistence, indiscriminate and extensive application may cause greater environmental damage[6], including water pollution, threatening endangered birds and other useful animal that feeds on insect pests. All these might end up disrupting the food chain, ultimately disturbing the ecological stability. Therefore, an integrated pest management strategy incorporating the rational use of synthetic insecticides and appropriate biological interventions should be prioritized while dealing with the devastating waves of locusts.

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