Desiccation-tolerant vascular plant

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Why is in news? New study discovers 62 desiccation-tolerant vascular plant species in India's Western Ghats, with potential applications in agriculture & conservation

Desiccation-tolerant vascular (DT) plants: Desiccation-tolerant vascular (DT) plants are **able to withstand extreme dehydration, losing up to 95% of their water content**, and they revive themselves once water is available again. This unique ability allows them to survive in harsh, arid environments that would be uninhabitable for most other plants.

India’s biodiversity hotspot, the Western Ghats, is home to **62 Desiccation-Tolerant Vascular Plant Species** which could have applications in agriculture, particularly in areas with scarcity of water.

DT plants have been studied for their possible applications in agriculture, particularly in areas with limited water resources. In tropical regions, they are the predominant occupants of rock outcrops.

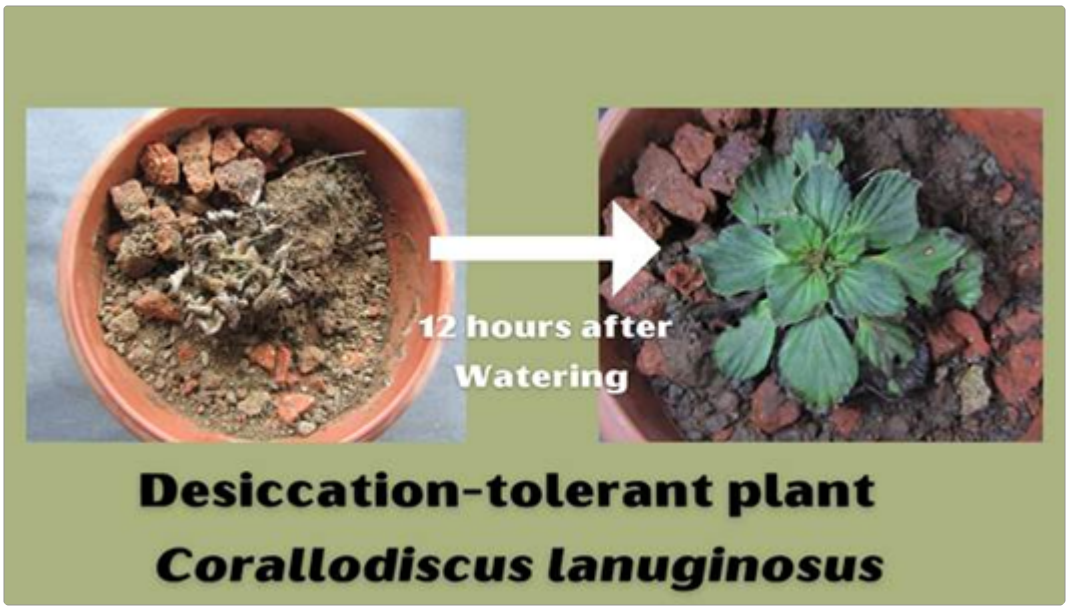
In India, DT plants have been relatively understudied. Although rock outcrops are common landscapes in the Western Ghats (WG), knowledge of DT plants in the region is poor.

A recent study by scientists from Agharkar Research Institute (ARI) Pune, an autonomous institute of the Department of Science and Technology (DST), has **identified 62 DT species in the Western Ghats, many more than the earlier known nine species**.

In the inventory of 62 species, **16 are Indian endemic, and 12 are exclusive to the Western Ghats outcrops**, highlighting Western Ghats’s importance as a global DT hotspot. In addition to rock outcrops, tree trunks in the partially shaded forests were also found to be crucial habitats for DT species, as per the study.

Nine genera of DT plants are reported as new, also in a global perspective, with **Tripogon capillatus representing the first record of an epiphytic DT angiosperm**.

The findings of the study can provide valuable insights into the biodiversity and ecology of the Western Ghats and aid in the conservation of DT plant species. Besides, understanding the mechanisms by which DT plants can tolerate dehydration could lead to the development of crops that are more drought-resistant and require less water.



Western Ghats:

The Western Ghats are internationally recognized as a region of immense global importance for the conservation of biological diversity, besides containing areas of high geological, cultural and aesthetic values.

A chain of mountains running parallel to India's western coast, approximately 30-50 km inland, the Ghats traverse the States of **Kerala, Tamil Nadu, Karnataka, Goa, Maharashtra and Gujarat**.

Older than the great Himalayan mountain chain, the Western Ghats of India are a geomorphic feature of immense global importance.

The Outstanding Universal Value of the Western Ghats is manifested in the region's unique and fascinating influence on large-scale biophysical and ecological processes over the entire Indian peninsula.

A significant characteristic of the Western Ghats is the exceptionally high level of biological diversity and endemism.

This mountain chain is recognized as **one of the world's eight 'hottest hotspots' of biological diversity along with Sri Lanka**.

The forests of the Western Ghats include some of the best representatives of non-equatorial tropical evergreen forests in the world.

At least **325 globally threatened (IUCN Red Data List) species** occur in the Western Ghats. The globally threatened flora and fauna in the Western Ghats are represented by 229 plant species, 31 mammal species, 15 bird species, 43 amphibian species, 5 reptile species and 1 fish species. Of the total 325 globally threatened species in the Western Ghats, 129 are classified as Vulnerable, 145 as Endangered and 51 as Critically Endangered.

A **number of flagship mammals occur in the property**, including parts of the single largest population of globally threatened 'landscape' species such as the Asian Elephant, Gaur and Tiger.

Endangered species such as the lion-tailed Macaque, Nilgiri Tahr and Nilgiri Langur are unique to the area.

The property is also key to the conservation of a number of threatened habitats, such as unique seasonally mass-flowering wildflower meadows, Shola forests and Myristica swamps.

The **39 component parts of this serial property fall under a number of protection regimes**, ranging from Tiger Reserves, National Parks, Wildlife Sanctuaries, and Reserved Forests.

All components are **owned by the State** and are subject to stringent protection under laws including the **Wildlife (Protection) Act of 1972, the Indian Forest Act of 1927, and the Forest Conservation Act (1980**).

Through these laws the components are under the control of the Forestry Department and the Chief Wildlife Warden, providing legal protection.

40% of the property lies outside of the formal protected area system, **mostly in Reserved Forests**, which are legally protected and effectively managed. The **Forest Conservation Act (1980) provides the regulatory framework** to protect them from infrastructure development.

A **Western Ghats Natural Heritage Management Committee** (WGNHMC) under the auspices of the **Ministry of Environment of Forests (MoEF)** to deal with coordination and integration issues is already functional.

The **livelihood concerns of the local communities are regulated by the Forest Rights Acts, 2006** and their participation in governance is ensured through **Village Eco-development Committees** (VECs).