

The need for more research on mangroves in Sri Lanka; a review on mangrove microbiology, genetics and physiology

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Mangroves, the tidal forests serve numerous ecological services and economic benefits for the well-being of the coastal communities. Hence, they are known as resourceful ecosystems and can be used effectively for new advancements in science. Many research have been conducted in the fields of mangrove ecology, anatomy, floral biology, reproduction etc. However, very few researches have been conducted on mangrove microbiology, genetics and physiology. From early 1980's to 2020, to the best of our knowledge, 169 journal articles (in peer reviewed journals) have been published on Sri Lankan mangroves of which only 1.6% papers covered mangrove genetics. Those studies which were confined to late 1990's and early 2000's and mainly focused on population genomic analysis aiming at studying population structure of some selected mangrove species and/or conservation genetics. Similarly, less than 2% of the published papers were related to mangrove microbiology and even those are not in depth studies. In terms of (eco) physiology, although stress physiological researches have recently been prioritized (<5%), core physiological role of salt (Na⁺) in mangroves is not well addressed. Therefore, new advancements are very possible if these knowledge gaps are addressed. We encourage carrying out more research on gene expression of mangrove species under different stress conditions to screen genes associated with agronomically important traits. These agronomic performances of crop plants, for example, stress tolerant crop species can be enhanced through genetic engineering. Also, it is encouraged to carry out metagenomics in mangroves. That may be useful in extracting new enzymes and antibiotics that make possible productive prospecting for medical sciences.

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