D 186

Correlation between atmosphere SO_2 content and epiphytic lichen diversity in Colombo and suburbs

Lichens have found to be highly sensitive to disturbances of nature, particularly to air pollution. Sensitivity of lichens, especially to SO_2 in the atmosphere allows them to be used as indicators of air quality.

The present study was carried out to determine whether a correlation exists between the diversity of lichen flora and the SO_2 concentration in the atmospheric air at six different sites within the same climatic zone. Epiphytic lichens on trunks of common trees were recorded using 250 cm^2 -graduated quadrate. To determine the diversity of lichen flora Shannon's Diversity Index was used. Sulphation rate method using PbO_2 candle was used to determine the SO_2 levels according to the present stud there is a strong negative correlation between lichen diversity and SO_2 levels in the atmosphere. ($r = -0.93$. $P<0.05$, $P<0.01$; turbidimeteric method and $r =-0.95$, $P<0.05$ $P<0.01$ gravimetric method).

The diversity of lichen flora was highest in Waga (H=1.904) and lowest in Fort (H=1.268) while the SO_2 level lowest in Waga (0.01 mg SO_2 / m^2 /day) and highest in Fort (0.49 mg SO_2 / m^2 /day). The percentage lichen cover was also highest (49.3%) at Waga and lowest in Fort (16.0%). The relative number of dying lichens was highest in Fort and in Waga such dying colonies were not recorded.

Bark pH and light intensity could influence the distribution and diversity of lichens. However, in this study these parameters were not found to be significantly different among different trees whether they were in the same or different sites. As a significant negative correlation between SO_2 content in the atmosphere and epiphytic lichen diversity was observed in this study, it could be concluded that SO_2 level in the atmosphere has an influence on the diversity of lichens.