ONLINE ISSN : 1882-4757
PRINT ISSN : 0372-798X

Journal of Weed Science and Technology
Vol. 51 (2006) , No. 3 pp.133-138

[PDF (910K)] [References]

Water quality of macrophyte habitats in rural Japan

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(Received: October 11, 2005)
(Accepted: April 12, 2006)

Summary:
This study is intended to clarify the effects of water quality on the ecological distribution of macrophytes. We studied the water quality of macrophyte habitats at 263 sites (106 cities) in rural Japan. Fifty-four species (22 families) were observed at the studied sites. The ecological distribution of these species differed according to their growth form. In general, water quality of emerged plant habitats was good and that of submerged plant habitats was poor in many water quality items, except for nitrogen and phosphorus. Habitats of some species that are ordinarily observed in good water were often markedly polluted by nitrogen and/or phosphorus. Almost all species were able to grow in good water. Data sets on water quality of 112 sites, and presence or absence data of 20 species were subjected to canonical correspondence analysis (CCA) for seeking correlations between water quality and distribution of macrohyte species. Consequently, CCA clarified some specific correlations between water quality items and macrophyte species: many submerged macrophytes correlated with DO and transparency, while some emerged macrophyes closely correlated with COD, BOD, SS, EC and Cl^-. These results suggest that integrated evaluation based on data sets of many water quality items provides clearer comprehension of water quality of macrophyte habitats.

Keywords: macrophyte, water quality, growth form, canonical correspondence analysis (CCA)

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doi:10.3719/weed.51.133

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