

不同流速與群聚模式之植生抗流機制研究

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摘要

The aim of this study was to examine how clustered aquatic macrophytes respond to different channel flow velocities in terms of changes in their flow resistance mechanisms. Study results showed that the flow resistance ability and environmental adaptability is superior in those planted in the patterns of clusters than those planted singly. *Oenanthe javanica* DC. (water celery) presented morphological variations at different flow velocities. In singly planted patterns, the growth rate became slow and plant shoots were shorter and softer to increase plant flexibility as flow velocities increased. Root length and root anchorage decreased. Root, stem, and shoot mass were also found to be inversely proportional to flow velocity. On the other hand, the clustered water celery did not show obvious difference in planting height, root length and averaged numbers of green shoots between control groups and experimental groups. However, the numbers of vascular bundles per square micrometer in the experimental groups increased as flow velocity increased, which was the same as the singly planted patterns. It evidenced that the flow resistance mechanisms of water celery when facing higher flow velocity is to decrease its section area but increase the density of vascular bundles.

關鍵字 : Key words: flow resistance mechanism, simulated channel, aquatic macrophytes, ecological engineering.