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水中隱沒型植株分佈型態對水流及底床之影響

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摘　　要　本研究以渠槽實驗模擬河川植株叢影響水流紊動與底床砂面沖淤型態之發展。實驗設計將倒伏透水性植株擺設爲橋台、丁壩、江心洲與固床工等四種型態，於改變排列密度之動床清水沖刷條件進行模擬。經渠槽實驗發現植株叢型態之阻水斷面比、邊壁阻擋效應與植株倒伏程度，此三者爲影響水流紊動強度與沖刷坑長寬比之主因；植株叢孔隙透水特性降低水流紊動強度，而植株倒伏擺盪則將紊流動能往近液面與下游傳遞，此現象具減緩沖刷能力集中效果。根據床面型態分析發現，橋台、丁壩、江心洲與固床工所對應沖刷坑型態分別爲狹長型、L 型、橢圓與寬窄型，而排列密度僅影響沖刷程度，對於沖刷坑型態無明顯變化；此外，橋台與丁壩型態易造成沖刷往上游擴張，江心洲則具有將沖刷導向下游之現象。

關鍵詞：河川植株叢，沖淤型態，水流紊動，植株倒伏。

Influence of Submerged Flexible Vegetation Arrangement on Flow and Bed Form

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ABSTRACT　The study focuses on the turbulent flow development process and scouring process caused by aquatic vegetation in a mobile-bed experiment. The four flexible plastic vegetations arranged types with different densities were abutment, spur dike, sand bar, and sill, They were used to note the flow type and scouring pattern in the mobile-bed experiments. According to the experiment results, vegetation arrangements, vegetation proneness and wall effect are the main factors affecting turbulent intensity, scouring pattern and scouring volume. Local scouring in the flexible plastic vegetations experiment is smaller than in the rigid structures experiment because the porous and flexible characteristic of vegetations decrease the turbulence kinetic energy by pushing the turbulence kinetic energy away from the scouring locations to the water surface and down stream. Vegetation arrangements affect the scouring pattern, and the arranged density affects the scouring volume. The scouring pattern of abutment, spur dike, sand bar and sill are slender, L-shaped, ellipse and narrow, respectively. The scouring pattern is prone to extending to the upstream in the abutment and spur dike experiments, but extending downstream in the sill experiment.　***Key Words*：**aquatic vegetation, scouring pattern, turbulence intensity, flexible vegetation proneness.

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