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MODEL FOR LOSS ASSESSMENT DUE TO FLOOD IN THE LOWER YELLOW RIVER

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Abstract

Large and frequent floods of the floodplain have caused huge loss to local residents in the lower reaches of the Yellow River. Since 1949, the population affected by the flood in the Yellow River has been about 8.87 million, and the submerged cultivated land area has been about 25.6 million acres. In order to provide the basis for flood control and disaster mitigation, it is very important to build a loss assessment model to evaluate flood damage. In this study, the relationship function between submergence depth and damage loss of corn, soybean, peanut, woodland and housing was proposed based on flood damage survey and statistical examination, applying the regression analysis. Also, a loss assessment system for floodplain flood was built in the lower reaches of the Yellow River. The proposed model was applied for loss assessment of the "82.8" flood in Dongbatou-Gaocun floodplain and the distribution maps on flood loss rate under 8000m³/s and 14000m³/s flood were described. The results show that the loss of agriculture crop, woodland and housing all increase with the peak flow and submerged depth in the same submerged time in the floodplain. Moreover, the loss is generally the greatest at the peak moment, and loss of low crops is larger than that of stalk crops.

Key words: floodplain, loss assessment, numerical simulation, regression analysis, Yellow River

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