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Evaluating Effect of Land Use Change on Environment in Ili Valley based on Ecosystem Service Value Analysis

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The land use change of Ili Valley in Xinjiang from 1985 to 2005 was studied in this paper based on RS data, field survey and GIS analysis. Furthermore, the effect of land use change on ecological environment was analyzed from calculating the change of ecosystem service value as a result of land use change. The results showed that the areas of the cultivated land, water area and construction land increased from 1985 to 2005, and the areas of forest land, meadow and unused land decreased during the period. The change of the cultivated land area and meadow area were more remarkable, at 31.53×104 hm² increase and 29.02×104 hm² decrease respectively. Land use change led to the change of ecological environment in the research area and influenced the ecosystem service value to some degree. The gross ecosystem service value in Ili valley increased 4.43% during the 20 years. The gross ecosystem service value increased most quickly in Tekesi county, which was 7.57%, while it decreased most quickly in Yining city, which was 27.33%. Besides, the value changes of 12 types of ecosystem services were analyzed. The ecosystem service functions of gas regulation, soil formation and protection, biodiversity protection and raw material provided by the ecosystem all decreased; whereas that of climate regulation, interfering regulation, source conservation, waste disposal, nutrient circulation, biological control, food supply, and amusement culture all increased. The sensitive coefficient analysis of the ecosystem service value also indicated that the adjustment of ecosystem service value indices of land use types had little effect on the gross ecosystem service value, so the results were credible.

[Key Words] : land use change ecosystem service value environmental impact assessment Ili Valley

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