

Economic valuation of gas regulation as a Service by rice-duck-fish complex ecosystem

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Abstract : Valuating the function of ecosystem services is crucial for accounting green GDP, making a conservation policy of ecological environment and the decision of regional development as well as sustainable development strategy. Rice-duck-fish symbiosis has been promoted in several developing countries as a way of increasing incomes for rice farmers, but investigations of its value have mainly focused on direct economic benefits, such as food and raw material production. Few studies have been conducted on the estimation of indirect services provided by rice-duck-fish complex ecosystem. The gas regulation service and its economic values provided by rice-duck-fish complex ecosystem were studied in Wuhan, China. The major components of gas regulation are O2 emission and greenhouse gases (GHGs, CO2) regulation. The results show that O2 emission from different treatments (including rice-duck (RD) rice-fish (RF), rice-duck-fish (RDF) and rice (CK)) ranged from 26,370 kg/ha to 33,910 kg/ha per year, with an economic value of 10,050-12,920 yuan/ha per year (Chinese currency: 1 euro=10.2475 yuan, August 28, 2007). The net GHGs exchange varied from 1,200 to 3,320 kg/ha per year, and its economic value ranged from 1,040 yuan/ha to 2,900 yuan/ha per year. Consequently, the total economic value of gas regulation provided by symbiosis complex ecosystems ranged from 11,090 yuan/ha to 15,820 yuan/ha per year, and the maximum overall economic value of gas regulation was provided by RDF complex ecosystem. The work will be useful for further understanding of the functions of rice-duck-fish complex ecosystem services and supplying the theoretical references to agricultural policy.

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gdp	o2
新种	greenhouse
new species	ch4
rdf	生态系统
new record	fdi
rf	元数据
ecosystem	本体
绿色gdp	语义web
ck	hg
经济增长	系统发育



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