

城市化过程中广州市农业生态系统服务价值的变化

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Changes of agroecosystem service value during urbanization of Guangzhou City, South China.

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摘要 根据1996、2000、2004和2008年广州市统计数据,运用市场价值法、影子价格法、造林成本法、碳税法 and 工业制氧法等,分别计算了广州市各农业生态系统的相关服务价值,据此对城市化进程中广州市农业生态系统服务价值进行评估.结果表明:1996—2008年,尽管农田、草地、水体生态系统的生态服务价值有所增加,但因林地生态系统服务价值减小较多(各年份林地生态系统在农业生态系统总服务价值中所占比例均在90%以上),导致广州市农业生态系统服务价值呈减少的总趋势.各类型生态功能的服务价值所占比例在年际间变化不大,服务价值大小总体表现为:气候调节>气体调节>产品服务>废物处理>土壤形成与保护>生物多样性保护>娱乐文化>涵养水源,且气候调节和气体调节的价值之和占总价值的91%以上.广州市城市化率与农业生态系统服务总价值间呈极显著的负相关关系($R=-0.905$, $P<0.01$),说明城市化率的提高将导致农业生态系统服务价值的降低.在城市化发展过程中,需要考虑保留适度的农业生态系统,以此保证区域的可持续发展.

关键词: 农业生态系统 生态服务价值 城市化 广州市

Abstract: Based on the 1996, 2000, 2004, and 2008 statistical data of Guangzhou City, and by the methods of marketing valuation, shadow price, afforestation cost, carbon tax, and industrial oxygen-producing, this paper calculated the related service values of various agroecosystems in Guangzhou, and assessed the changes of agroecosystem service value during the rapid urbanization of the City. In 1996-2008, though the service values of farmland, grassland, and water ecosystems had somewhat increase, the overall agroecosystem service value of Guangzhou decreased, mainly due to the more decrease of forest ecosystem service value which occupied more than 90% of the total service value each year. Over the studied period, the proportion of each individual functional service value to the total service value changed little, and the contribution of each individual functional service value was in the order of climate regulation > gases regulation > product service > waste treatment > soil conservation > biodiversity conservation > recreation and culture > water source retention and storage. The sum of climate regulation and gases regulation service values took over 91% of the total agroecosystem service value. There was a significant negative correlation ($R=-0.905$, $P<0.01$) between urbanization rate and total agroecosystem service value, suggesting that the increase of urbanization rate would lead to a decrease of agroecosystem service value. Therefore, it requires an appropriate reservation of various agroecosystems to maintain the regional sustainable development during urbanization.

Key words: agroecosystem ecosystem service value urbanization Guangzhou City

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