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Sustainable development requires energy source stability and environmental maintenance. Over-exploitation and the intensive use of nonrenewable fossil fuels thus eventually hamper the development of human society. Bioenergy is one solution to this problem. This study formulates a price endogenous, partial equilibrium mathematical model to simulate the economic and environmental effects of bioenergy development in Jiangxi province, China. The result indicates that the farmers' revenue primarily originates from energy sales, government subsidies and emission reduction. An inappropriate subsidy amount will result in inefficient resource allocation; in addition, the marginal benefit from bioenergy production is fairly small. The result also shows that the joint production of bio-electricity and ethanol could be a better choice if climate change mitigation is considered.

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