African Applied Freshwater Ecology
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Genetically Modified Crops in African Freshwater Systems: Perspectives and Policy Developments in South Africa,

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Abstract

The adoption of genetically modified (GM) crops has been a contentious issue in global agriculture, particularly concerning their environmental and socio-economic impacts. In South Africa, where GM crop cultivation began in , there is considerable debate regarding the integration of these technologies into freshwater ecosystems. A comprehensive literature review was conducted, incorporating academic journals, government documents, and stakeholder interviews. Data were analysed using thematic analysis to synthesize findings from various sources. Analysis revealed a complex interplay between GM crop adoption rates (10% of total cultivated area) and public perception, with concerns primarily centred around biodiversity impacts and regulatory oversight gaps. While South Africa has made strides in policy development to address environmental risks, there is still room for improvement in stakeholder engagement and comprehensive monitoring frameworks. Stakeholders should prioritise transparent communication strategies and robust adaptive management approaches to manage the ecological footprint of GM crops more effectively. The empirical specification follows $Y = \beta_{0+\beta}^{\rightarrow} p\, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *African ecosystems, biotechnology, genetically modified organisms (GMOs), genetic engineering, policy analysis, sustainable agriculture, transgenic crops*

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