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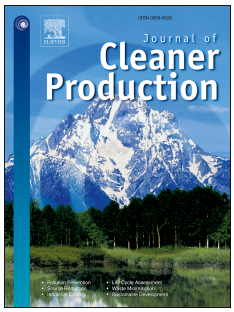

Toward sustainable crop production in China: An emergy-based evaluation

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Toward sustainable crop production in China: An emergy-based evaluation

Zuoxi Liu[a], Yongyang Wang[a], Yong Geng[b, c*], Rundong Li[a], Huijuan Dong[b], Bing Xue[d], Tianhua Yang[a], Shanshan Wang[e]

[a] Key Laboratory of Clean Energy of Liaoning, School of Energy and Environment, Shenyang Aerospace University, Shenyang 110136, Liaoning, China

[b] China Institute for Urban Governance, Shanghai Jiao Tong University, Shanghai 200030, China

[c] School of Environmental Science and Engineering, Shanghai Jiao Tong University, Shanghai 200240, China

[d] Key Laboratory of Pollution Ecology and Environmental Engineering, Institute of Applied Ecology, Chinese Academy of Sciences, Shenyang, China

[e] Department of Quality Control, Liaoning Center for Disease Control and Prevention, Shenyang 110005, China

ABSTRACT: China's demand for crop products is increasing, leading to a great deal of consumption of local resources and industrial inputs such as agricultural machineries, chemical fertilizers, pesticides and energies. Many environmental problems also occurred, such as water pollution, soil erosion and contamination, and CO_2 emissions. Therefore, it is imperative to assess crop production's sustainability and identify the key driving forces of its rapid development so that the proper mitigation policies can be proposed. An emergy analysis method was employed due to its advantage of linking economic development with natural ecosystem service. Emergy sustainability index was chosen as the key indicator to measure crop production performances in 31 Chinese provinces for the period 2006-2015. The results demonstrate that the EYRs in 31 Chinese provinces are entirely keeping around 1 and the maximum and minimum values of ELR are respectively 1.71 in Guizhou and 8.29 in Tibet. Under this circumstance, the mean ESI values in 30 Chinese provinces are all less than 1, except Guizhou. This indicates that most Chinese provinces will have to improve their crop production