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

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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 CO₂ 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

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