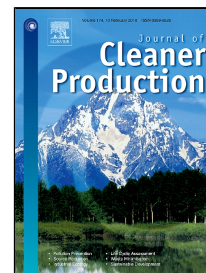


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The Impact of Fine Particulate Matter (PM_{2.5}) on China's Agricultural Production from 2001 to 2010

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Abstract

This study provides the first empirical analysis of the direct impact of PM_{2.5}, one of the primary pollutants of haze, on China's agricultural output. An econometric model is estimated using panel data on three of the most commonly grown crops (wheat, rice, and corn) from 303 prefectural level administrative divisions in 25 provinces and autonomous regions in China from 2001 to 2010. The interaction effect between PM_{2.5} and climatic factors, the nonlinear effect of PM_{2.5} and climatic factors, and the possible endogeneity between PM_{2.5} and agricultural production are taken into account. PM_{2.5} concentrations have significant adverse effects on average yields of wheat and corn, suggesting that the reduction of PM_{2.5} can contribute to the yields of these two crops. Similar to climatic factors, such as temperature, precipitation, and the sunshine, PM_{2.5} has a quadratic effect on the average yields of wheat and corn. In the future, it remains a continuing challenge to develop effective long-term strategies in the face of air pollution represented by PM_{2.5} and the hazards of PM_{2.5} to agricultural production and food security.

Keywords: Air Pollution; PM_{2.5}; Crop Yield Loss; Nonlinearity; Food Security

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