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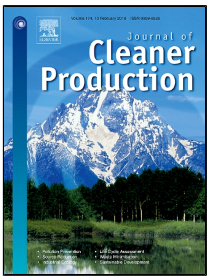

The Impact of Fine Particulate Matter ($PM_{2.5}$) on China's Agricultural Production from 2001 to 2010

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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 perfectural 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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