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## Comparison of Determinants of Fertiliser Use Between Wheat and Maize in Hebei Province of China

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### Abstract

Hebei province is one of the most productive agricultural regions and one of the key areas for national food security in China. Since the 1980s, an intensive use of chemical fertilisers has been applied to the regional typical wheat-maize rotation system. This resulted in an increase in productivity of the two crops; however it led to a growing threat to the sustainability of local agricultural systems and ecosystems. In order to control and reduce excessive fertiliser usage, much research on optimal fertiliser application and determinants of fertiliser application has been conducted. However, there are few studies comparing the determinants of fertiliser use across different crops. The aim of this study is to answer the question of whether the determinants of fertiliser use intensity are identical or different between wheat and maize in Hebei province. Using a panel data covering the rural households in Hebei province over five years, the factors influencing fertiliser application to wheat and maize are analysed respectively. Under the wheat-maize rotation system, each household grows both wheat and maize in the same field every year. This makes the fertiliser use on the two crops comparable and leads to less bias in the results. The explanatory variables include age, education, off-farm job, agricultural assets, agricultural insurance, formal and informal loans, farm size, hired labour, manure use, irrigation, crop yields, crop sales and government purchase and are analysed in a fixed effects model. The findings of this study are expected to identify the different determinants of fertiliser use intensity between wheat and maize production in Hebei province. These findings will be the empirical evidence that can guide existing as well as future fertiliser use policies, which take crop differences into consideration.

**Keywords:** China, crop comparison, fertiliser use, Hebei province, wheat-maize rotation