

عنوان مقاله:

?How to Use Chemical Fertilizer Scientifically to Raise Yield of Rice

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نویسندگان:

.M. Zhong - School of Economics and Trade, Fujian Jiangxia University, Fuzhou ۳۵۰۱۰۸, China

.D. He - School of Economics and Trade, Fujian Jiangxia University, Fuzhou ۳۵۰۱۰۸, China

.J. Yang - School of Mechanical and Automotive Engineering, Fujian University of Technology, Fuzhou ۳۵۰۱۱۸, China

.W. Ke - School of Economics and Trade, Fujian Jiangxia University, Fuzhou ۳۵۰۱۰۸, China

خلاصه مقاله:

The negative impact of excessive fertilization on the sustainable development of agriculture has become the focus of universal attention. Thus, the aim is to maximize the yield of rice without imposing too much damage on the environment. This paper uses data regression analysis based on the statistical data (from ۱۹۹۰ to ۲۰۲۰) of a certain region to explore the impact of fertilizer application on rice yield, and adopts the sensitivity analysis to study the sensitivity of rice yield to the applied amount of chemical fertilizer. The results show that the average rice yield increased with increasing Nitrogen (N) and potassium (K) fertilizers application within the statistical data range; while the average rice yield decreased as Phosphorus (P) fertilizer application increased. Simultaneously, increasing the application of N and K fertilizers improved the average rice yield. Reducing the amount of P fertilizer and increasing the proportion of K fertilizer positively affected the average rice yield. The sensitivity analysis indicated that the average rice yield was most sensitive to K application amount. The sensitivity value maximized at a small amount of N fertilizer ( $۱۱.۲۵ \text{ kg hm}^{-۲}$ ) and a large amount of P fertilizer ( $۶ \text{ kg hm}^{-۲}$ ). The findings reveal the interactive effect of multiple fertilizer application rates on grain yield and address the unclear mechanism of single fertilizer application on grain yield in the existing research. This paper provides a theoretical basis for scientific fertilizer use, agricultural quality, efficiency improvement, and sustainable development of agriculture.

کلمات کلیدی:

.Application of chemical fertilizers, Sensitivity analysis, Sustainable development

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