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EXPLORATORY STUDY ON VARIABLE RATE NITROGEN FERTILIZER APPLICATION TECHNOLOGY

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Abstract

In the view of sustainable global food grain production and nutritional security, effective nitrogen fertilizer management is vital. Key challenges in nutritional management include higher fertilizer costs, peak season demand, and environmental effects. Variable-rate fertilizer application has emerged as a vital technology, providing a solution to these challenges. This approach integrates various novel technologies, such as remote sensing techniques, drones, sensors, computer applications, and fertilizer applicator equipment, and has been successfully experimented across a wide range of crop cultivation (cereals, trees, fruits, plantation crops millets, pastures etc). A study has been taken to review the research outcomes on variable rate nitrogen application management in global scenario through online search platforms. Since the end of the 20th century, vast studies have explored the technical, agronomical, environmental and economical perspectives of nitrogen fertilizer application with variable rate strategy. More than 25 nations were involved in of variable rate fertilizer application research with United States and China in lead. Research chronology has been observed since the 1990's, but the rate of adoption looks to be minimal. Worldwide adoption of variable rate technology must be increased to a higher level to appreciably reflect the benefits of variable rate N management technology.

Key words: fertilizer use optimization, mechanization, nitrogen use efficiency, variable rate technology

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