

## Is there Manipulation of Self-Reported Yield Data in Crop Insurance? An Application of Benford's Law

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This paper uses analytical techniques based on Benford's Law to determine whether there is evidence of yield data manipulation in crop insurance. Results of the analysis suggest that there is yield data manipulation for insured non-irrigated cotton yields in the southeastern U.S. We find that the harvested yield data reported in the crop insurance database tend to be understated by approximately 16%. The results of the study point to the potential usefulness of the analytic techniques based on Benford's law with respect to allocation of investigative resources for fraud detection in crop insurance and other business applications.

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### INTRODUCTION

Since the early 1990s, the need to reduce fraud, waste, and abuse in the U.S. crop insurance program has been a recognized priority of the United States Congress, the United States Department of Agriculture (USDA), the USDA's Risk Management Agency (RMA),<sup>1</sup> and the private crop insurance companies. Accordingly, in the debates prior to the approval of the Agriculture Risk Protection Act (ARPA) of 2000, a major issue was how to further combat fraud, waste, and abuse in the crop insurance program. Enough concerns were raised during the debates that Congress included several sections dedicated to expanding and strengthening the anti-fraud authorities of the RMA and private crop insurance companies.

Even with the increased awareness about fraud, waste, and abuse in the U.S. crop insurance program, there has been limited information as to the extent of fraud in the program. A recent estimate from the U.S. GAO (1999) reveals that approximately 5% of all crop insur-

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<sup>1</sup> RMA is the federal agency that oversees the federal crop insurance program. The U.S. crop insurance program is different from other lines of insurance in the sense that it is a privately-provided but publicly supported program. That is, private insurance companies (through their agents) sell the policies, but the government reinsures these companies and oversees the development and general integrity of the program.