

**From Guesstimates to GPStimates:
Land Area Measurement and Implications for Agricultural Analysis**

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Land area measurement is a fundamental component of agricultural statistics and analysis. Yet, commonly employed self-reported land area measures used in most analysis are not only potentially measured with error, but these errors may be correlated with agricultural outcomes. Measures employing Global Positioning Systems (GPS) on the other hand, while not perfect especially on smaller plots, are likely to provide more precise measures and errors less correlated with agricultural outcomes. In this paper, we use data from four African countries to compare the use of self-reported and GPS land measures to (1) examine the differences between the measures, (2) identify the sources of differences, and (3) assess the implications of the different measures on agricultural analysis focusing on the inverse productivity relationship. The results indicate that self-reported land areas systematically differ from GPS land measures and that this difference leads to potentially biased estimates of the relationship between land and productivity.

Key words: Survey methods; land measurement; GPS measure; inverse farm size- productivity relationship