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Using smartphones to assess crop damage and design picture-based crop insurance

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Micro-insurance for smallholder farmers has the potential to guarantee them a minimum income in the face of increasing climate variability and extreme events affecting crop yields under climate-change. However, insurance penetration remains low in rural areas of developing countries due to expensive loss verification, moral hazard and difficulties with paying premiums and pay-outs.

Standard index based insurance can provide some relief by assessing losses automatically, based on an index that is beyond the control of farmers. However, index insurance typically covers weather risk or the average yield in an area, and not a farmer's actual yield; hence resulting in discrepancies between the actual losses and the pay-outs. This so-called basis risk has been shown to be one of the main reasons for low insurance uptake.

Here, we show how a crowd-sourcing methodology sidesteps some of the current issues with index-based insurance and test whether it increases take-up due to an increased granularity and more active farmer participation. Mainly, we tap into existing and widespread cellphone technology to obtain picture based loss assessment indices of farmer crops throughout the growing season.

We present the initial data collection protocol and preliminary results of a trial tracking approximately 500 farmers in the states of Punjab and Haryana in India. We will discuss the advantages and practical challenges of this crowd-sourced picture based methodology in assessing crop damage as well as future applications of this methodology for insurance and agro-advisory purposes.