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DELIVERING SOLUTIONS AT THE INTERSECTION SATELLITE BIG DATA, CLOUD COMPUTING, MACHINE LEARNING AND IOT TECHNOLOGY - THE CASE OF SATSURE

Abstract

According to the Centre for Global Health Research, more than 12,000 farmers in India have committed suicide every year since 2013. Farmers are dependent on rainfall for agriculture are at the risk of weather related losses, and this inhibits their socio-economic development. The risk of climate change and weather shocks also limits their willingness to invest in measures like better seeds, fertilizers, and pesticides that might increase productivity and improve their economic situation. One of the ways of mitigating these risks is providing cover via farm insurance.

Given the proliferation of both commercial Earth Observation (EO) constellations and publicly available satellite imagery, there is immense potential to work at the intersection satellite big data, cloud computing, machine learning and IoT technology, for delivering clear decision points to stakeholders in the agriculture ecosystem. Improving the access to institutional credit and crop insurance is one of the largest impact that satellite big data can have, as the gap in agriculture financing in India alone is pegged at $200 billion annually$.

We showcase the case of SatSure and its pursuit to evolve crop insurance and agri-banking products, which provide decision support points for de-risking these businesses, by combining climatic variables with geospatial and socio-economic datasets. Such integrated solutions provide actionable intelligence, not only to financial services working in the agriculture sector, but to all the key stakeholders across the value-chain, for better policy making and improved market linkages. Some of the key products that SatSure has developed for removing market inefficiencies combine crop yield information, crop acreage, weather indicators and market pricing, using current and archived satellite imagery as the primary data.

By addressing the challenges in improving crop insurance penetration among small land-holding farmers in India, and enabling the increase in scale of finance, through its regional crop models and yield indices, SatSure is catalyzing the underwriting process by providing historic and predictive crop yield at both micro and macro levels, without having to rely on inaccurate survey-based measurements. One of the goals achieved is to reduce data anomalies in the agricultural sector and enable smart insurance contracts, cost-efficient claim settlement, and build accurate indices that represent the yield and price risk of crops. This paper showcases how one can create social and economic value by using the large repository of satellite and weather data, and combining traditional remote sensing approaches with machine learning algorithms for extracting maximum insights from large datasets.