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Crop Analytics Can Reform Agri Procurement

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We all know how digital technologies are weaving a story of transformation in the landscape of agriculture. The growing applications of cutting-edge technologies like Artificial Intelligence (AI), Internet of Things (IoT), drones and **Big Data & Analytics** are reforming the complex farm-to-fork chain, setting the stage for precision agriculture. The first crucial step in this food value chain is procurement, a process predominantly anchored by governments.

If we consider the Indian agriculture story, **procurement is of especial interest since the sector valued at \$488 billion employs around half of the country's population of 1.3 billion and contributes 18 per cent to the Gross Value Added (GVA)**. I am harping on procurement because the fate of all the farmers is inextricably linked to it. India has a Minimum Support Price (MSP) regime to ensure the farmers get remunerative prices on their crops and are insulated from market price vagaries. But procurement can be tricky, and navigating a dispersed farm-to-fork chain can pose an immense challenge for the state procurement agencies. Realizing the enormity of this challenge, governments have injected automation in the chain by creating farm registries, integrating demographics of farmers with

land records, digitalizing procurement and linking it seamlessly with the markets.

But governments can't be smug to assume that digitizing procurement makes it foolproof. There have been instances that validate how even digitized systems can be vulnerable to leakages and manipulation. For the state actors, knowing the provenance of the crop is essential. Even more critical for them is to figure out if the farmer who sells the produce at a procurement centre has actually raised it. What, if a trader has procured the crop from another state and passed it on as the farmers' own produce? Unless this manipulative practice is nipped in the bud, the state-sponsored procurement, despite all its good intent, will end up benefiting only a clutch of big farmers and traders, leaving the actual growers in the lurch. And it is imprudent to expect any government procurement agency to buy all that is cultivated.

The procurement tangle runs deeper. Misreporting can occur even on plots where the crops grow. For example, a landowner farmer and a landless sharecropper can claim the same parcel of land on which they raised paddy or another crop. Discrepancies can also crop up if the same farmer registers with multiple societies.

I feel this crisis of misreporting in crop production is rooted in the lack of ground truth intelligence in our procurement system. Despite the strides by [AgriTech](#), there is not enough high-quality, timely and interoperable ground truth data, especially in smallholder farms.

The absence of enough ground-level intelligence limits the gains that governments could otherwise make from their [automated agriculture procurement systems](#). An integrated crop analytics solution that combines satellite-based GIS mapping, image analysis & processing together with the power of visualization offers a way out of the procurement riddle. The solution attaches importance to granular data collection and plot-level analytics to capture satellite images that can be analyzed using Machine Learning (ML) modules. Advanced crop analytics can apply to every stage of the procurement process to unearth data, which can be used to draw actionable insights.

Analytics, for example, can capture data on the trends of farmers' registration in the last four seasons, registration of new farmers, drop-out of farmers and the number of plots registered by landowner farmers and landless sharecroppers, district wise and percolating down to the village level. And by tracking the critical data on crops received by millers, the analytics solutions help the state procurement authorities to get an accurate picture of crop traceability and the farmer producing it.

