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"DIS-AGGREGATING" EO IMAGES AND SPATIAL DATA IN A SPATIAL ANALYTICS MODEL
FOR FARMER'S AGRICULTURAL ADVISORY AT PLOT LEVEL

Abstract

We work for knowledge management for farmers in India from back-end analytics of EO data, meteorological observations, positioning information, ground data and GIS maps so that farmer is enabled to take right-decisions for enhancing income. The problem is vexing in India because of small land holdings - the average being 1.15 hectare. Advances in spatial data and data analytics is making it possible to address the agricultural needs even in small land holdings.

The Centre for Spatial Analytics and Advanced GIS (C-SAG; www.csag.res.in), with support from Tata Trusts, has developed an Agri-GIS - a suite of Spatial Analytics solutions that adopts a unique method of "dis-aggregation" of spatially-referenced data for assessing crop suitability; crop-water requirements; weather alerts; assess soil and nutrition; evaluate social and economic status of farmers and integrate into an advisory of crops suitable, irrigation and fertilizers, production practices, financing, insurance, inputs and market etc.

The Agri-GIS is developed on a "single, common, standardized, spatially integrated multi-variate dataset" (304 parameters) and adopts Spatial Analytics models based on deep learning and AI concepts. The spatially referenced "dis-aggregated" data are analysed for assessing farmer's social, economic and natural resources - which are then integrated into a Agri-GIS Advisory template. Space provides critical 25

Agri-GIS has been developed in 613 villages of S Odisha and covers 53k farmers at plot level. Dissemination of the Advisory is a challenge – in making farmers use the Advisory. We have also assessed that Cooperative Farming can be one way of bringing sustainable and remunerative economics.

The paper will address the various elements of the Agri-GIS engine and its scope and how it provides farmers with an information/knowledge capability. The paper will also bring out the assessment of farmer's needs of information; chain of Spatial Analytics steps adopted and outline the deliverable of 5 Farmer Advisories in Kharif 2018 and Rabi 2019 crop season. The paper will also outline the audit-evaluation carried out for 1500 farmers after harvest. The paper will highlight the partnerships - involvement of farmers with Tata Trusts and C-SAG.