OP24: Spatial BigData Analytics for intensification of pulses

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His current research focus is on developing digital agriculture, bigdata analytics, resilient agro-ecosystems, sustainable intensification, enhancing input use efficiency for delivering better interventions and package of practices to reach out to smallholding farmers to improve food security and livelihood in the dry areas. He has been recognized with number of international awards and honors such as the Young Scientist of the Year, Outstanding Young Scientist, Best Team Initiative, Outstanding Team Member, Board Member, Steering Committee Member, and Panel Member of Geoinformatics for Agriculture, Working Group on high resolution remote sensing, advisory member of WMO/GWP's Integrated Drought management Program (IDMP), recently received Outstanding Young Scientist Award from the Association of Agricultural Scientists of Indian Origin affiliated with the American Society of Agronomy.

Supply-demand gap of agricultural commodities continues to rise while total arable land area is not expected to increase significantly. Future increases in agricultural production, particularly pulses, will be contingent upon agricultural intensification. One such intensification opportunity lies in the potential use of pulses in crop-fallows (e.g., rice fallows, accounts ~12 million ha in India alone) and other cropping g systems in different countries. Along with other constraints in the use of fallows, lack of updated and timely information is one of the major constraints in understanding the spatio-temporal dynamics of crop production- its spatial distribution, pattern, extent, intensity, duration, rotation and feasibility. Cropping systems dynamics varies across agro-ecosystems, mostly driven by climate, markets, and agronomic/cultural practices. Consequently, there is a need to establish a digital decision system which provides accurate and timely information that would facilitate the development of appropriate intervention packages that consist of improved- crop varieties, inputs use efficiency, nutrient balance, and agronomic practices. An important input into these analytics is the Earth Observation Systems and big-data analytics to assist in the identification and prioritize extrapolation domains for pulses across the spatio-temporal scales. Near-real-time satellite remote sensing along with climate and in-situ observations (meteorological stations and cell phones) will accelerate interventions and decision making by capitalizing upon input use efficiency; invests in sustainable land, water, crop and management practices; that will promote sustainable resource use and enhance livelihoods. The overarching focus is the development of an interactive digital-agriculture platform (e.g., http://geoagro.icarda.org/india/) that contributes to the emergence of sustainable intensification of pulses and allied crops.