HARNESSING THE POWER OF IMAGERY TO BOOST PRODUCTIVITY

Deimos Imaging's high-quality and precisely calibrated sensors can support the information needs of precision farming.

by Ana Isabel Martínez



ith the second largest population in the world and its continuous growth, India is facing a great number of challenges, such as improving overall food security while making farms more profitable and farmers more capable. Agriculture remains a crucial sector, employing 52% of India's workforce and with some 70% of the country's rural households still depending primarily on it for their livelihood. However, India is transitioning to a knowledge and technology economy, resulting in a migration of workers from agriculture to other new jobs. This change in economics and culture is

creating a challenge: how to improve agricultural yield and increase efficiency, without raising costs. Investment in technology is crucial to modernize and implement productive agricultural techniques, but which technologies will present the most easy-to-use and costeffective solution?

Improving productivity by taking informed-decisions

A farmer usually needs to take around 40 decisions over a crop cycle, from pre-harvesting to postharvesting phases. Yield, productivity and cost of cultivation will depend on

About Author



Ana Isabel Martínez Communications Manager DEIMOS IMAGING, an UrtheCast Company Email: ana-isabel.martinez@deimosimaging.com

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these decisions. Now, what if the farmer gets to see all the data from his field and also gets help to take an informed decision? This is where geospatial information can help achieve the much-needed boost of productivity in the Indian farmlands.

Deimos Imaging's high-quality and precisely calibrated sensors can support the information needs of precision farming. We provide a wide range of multi-sensor, multi-spectral and multi-resolution imagery that enables frequent monitoring, from continental to plot-level scale.

A feasibility study carried out over the entire India showed that, combining our virtual constellation medium and high-resolution sensors, we are capable of imaging the whole country three times per week. Medium- and high-resolution data are key for large parcels and national phenomena monitoring, such as drought assessment, crop type mapping, food security and overstock risk assessment.

Additionally, very-high resolution data is the ideal solution for intra-field surveillance, access to information inside small parcels <0.05 ha, disease detection, water stress, yield estimation, information on irrigation, fertilizers, pesticides, inventory and plot delineation. With over 20 sensors at a resolution equal to or better than 1 meter, we guarantee exceptional revisit capabilities. A feasibility study carried over a 12 square kilometers parcel South of New Delhi showed that we can cover it more than 40 times per week in average.

This frequency of fresh imagery allows for the management of crop field irrigation with unprecedented precision. The status of every area can be assessed daily and irrigation can be commanded with incredible precision, resulting in huge water savings and a large increase in crop yields. In addition, this allows an early detection of crop illnesses, enabling the farmer to take quick action to minimize crop damage.

Enabling Transformational Insights with UrtheDaily™

As a natural evolution from our virtual constellation and given the importance of satellite imagery in the farming industry, we are developing a new constellation specifically designed for precision agriculture and monitoring purposes: UrtheDaily™. This planned constellation will provide highquality, multispectral optical imagery of the Earth's entire landmass (excluding Antarctica) every day, at the same time, from the same altitude, directly into your applications. The spectral bands of the constellation are specifically selected to match Landsat-8, Sentinel-2, RapidEye and Deimos-1 bands, to ease the constant and automatic in-flight cross-calibration with trusted references, minimize the effects due to atmospheric variations, and to provide improved accuracy of key information products. With its exceptional capabilities, UrtheDaily™ will present a disruptive and problem-solving technology that can foster sustainable development, not only in India, but worldwide.



Figure 1. Shows the feasibility study for covering a 12 square kilometers area, South of New Delhi, during one week with Deimos Imaging's very-high resolution sensors.



Figure 2. Shows an image of agriculture structures South of New Delhi captured by Deimos-2