Improving food security through satellite information

RIICE supports partner countries in satellite-based rice crop monitoring to make reliable forecasts of their country’s rice production. Governments can also use the data to assess very effectively the impact of natural disasters and the related extent of rice crop damages. Such information can be a useful resource for decision-making, targeting of resources, crop insurance and disaster response.

Tamil Nadu: RIICE plays key role in disaster response.

The heavy rain that struck Tamil Nadu in November 2015 lasted for several weeks, causing over 300 fatalities and destroying a rice under water in an online database of real-time data. The authorities urgently needed to find out who had been affected in order to act immediately. Hilfe came from Tamil Nadu Agricultural University (TNAU), RIICE’s implementation partner. TNAU supplied what the authorities had been looking for in a few days, thus helping the authorities to provide carefully targeted assistance. The ESA satellites use radar sensors to scan the earth’s surface. Unlike optical systems, radar sensors generate reliable data at night and in cloudy conditions — a crucial advantage at times of persistent heavy rain. During the Pachaiyappa period in February 2016, TNAU supplied vital information on who had been affected in which areas and in what form, thus helping the authorities to provide carefully targeted assistance. Just a few days after the heavy rain started, TNAU drew up an initial disaster report for the Chief Secretary in the Government of Tamil Nadu based on high-resolution radar images. Thanks to this information, the government was able to act immediately.

Farmers in Cuddalore received 50 metric tons of rice seed and 30,000 vegetable seedlings. According to the state government official responsible for coordinating the response, the government was able to take immediate action with the help of satellite data. RIICE works with data supplied by the Sentinel-1 series of satellites which is carried out by the European Commission (EC) in partnership with the European Space Agency (ESA). Together with the local experts, the job of the RIICE team is to estimate crop production volumes on the basis of all this data.

Today rice – tomorrow wheat, soya and maize.

In addition to the processed radar imagery derived from the ESA Sentinel satellite, the RIICE project also depends critically on the quality of cooperation with local implementation partners such as experts from governmental institutions or universities. While the satellite-based radar technology produces measurements, together with the local experts, the job of the RIICE team is to estimate crop production volumes on the basis of all this data.

The method of monitoring and forecasting rice production by combining large-scale radar imagery and sophisticated semi-automated processing of these images and fine-tuning of radar agricultural models could be used in future to develop similar approaches to monitor other important crops, such as soy, maize and wheat.


The data generated by RIICE provides a very effective information base for use by insurance companies in case of insured damage. Such data can be used by insurers to better assess and, in future, even prevent damage. Satellite-based crop production monitoring can help to make agricultural insurance more affordable. The knowledge and experience RIICE and partners have gathered over several years can be used to develop a global reaction system to facilitate the implementation of the concept and the full potential of the method, which could then be used for other crops and regions.

A single project with numerous partners in five countries

RIICE (Remote Sensing-based Information and Insurance for Crops in Emerging Economies) is a joint project of the International Rice Research Institute (IRRI), the Swiss satellite company sarmap SA, GIZ (on behalf of BMZ), and the reinsurer Allianz Re. To date the project has established partnerships with the following institutions –

Indonesia: Ministry of Agriculture, Forestry and Fisheries, Department of Planning and Statistics of the Ministry of Agriculture, Indonesia Rice Research Institute, Indonesian Institute of Sciences;

India: Ministry of Agriculture, Department of Agriculture at the Government of Tamil Nadu, Tamil Nadu Agricultural University, Agricultural Insurance Company of India;


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