INDIA CROP MODEL.

The first probabilistic crop model for India that utilises physical crop simulation methods to capture losses under the RWBCIS and PMFBY insurance schemes.

Comprehensive. The updated JBA India Crop Model is a probabilistic insurance loss model that facilitates risk management and re/insurance pricing within the guidelines of the Pradhan Mantri Fasal Bima Yojana scheme (Indian Prime Minister's Crop Insurance Scheme or PMFBY) and the Restructured Weather Based Crop Insurance Scheme (RWBCIS). With more than 40 million farmers covered, the model captures multiple weather perils that contribute to seasonal crop failure in India across a broad range of crops. It provides a comprehensive tool for insurers involved in the seasonal bidding and pricing of the Indian crop insurance schemes.

Unique approach. The model has been developed utilising state-of-the-art physical crop modelling software. The process simulates how contemporary crops would have grown throughout the 20th century based on historic daily weather conditions. This is an innovative new approach and not only presents a consistent catalogue of crop yields but also a more realistic appraisal of potential losses.

Industry validated. Developed with the collaboration of leading industry partners, JBA has validated the model with detailed insurance claims data from multiple years of crop losses.

Additional Insights. An 'ENSO+' model has also been developed by JBA to work alongside the original model. This represents the potential impact of the positive phase of the El Nino Southern Oscillation (ENSO). Based on a refined historical event set of years associated with ENSO+ (positive phase), clients can run a sensitivity test to see how ENSO+ event set years could impact their portfolio.

Uses

Pricing crop business plans for the kharif and rabi seasonal renewals

Risk management and re/insurance pricing for insurers involved in India's PMFBY and RWBCIS insurance schemes

Demonstrating the impact of multiple extreme weather perils and how they contribute to seasonal crop failure and subsequent losses

Exploring the impact of ENSO+ event set years on your portfolio

Key Technical Details

Covers RWBCIS and PMFBY crop insurance schemes

Covers both kharif and rabi growing seasons

Crops modelled represent c.97-98% of all insured crops

10,000 years of losses

Results reported per district, crop, insurance cluster, state or portfolio

Methodology is based on a physical crop model (instead of de-trending historic yields)

Additional Enso+ model available

JBA risk management

THE FLOOD PEOPLE.®

" *The Indian Government has publicly stated that it is looking to ensure cover for 50% of India's 130 million farmers by 2020 through the PMFBY scheme. To facilitate and support this vital and ambitious goal, it is hugely important to have robust models in place to help assess the nature of the risk and exposure to the market. Collaborating with JBA ensures we combine Chaucer's underwriting expertise with JBA's leading modelling capability.*

Tom Graham, *Head of Regional Treaty Development at Chaucer, Singapore.*

Background

The PMFBY and RWBCIS schemes in India are dedicated to providing insurance coverage and financial support to local farmers in the event of failure of crops as a result of natural calamities, pests and diseases.

With the backing of the Indian Government, insurance premiums in PMFBY grew 30% in 2017 and, therefore, it has become a major industry for international re/insurers.

The scheme is based on a single insurer typically being granted a cluster of districts. Risk insurance is then provided to cover yield losses from natural catastrophe perils such as drought, flood and wind damage.

JBA's India Crop Model is the ideal tool to help users format state level insurance 'business plans' into a detailed district-crop portfolio for analysis.

About JBA

JBA is the global leader in flood risk management. Our flood maps, catastrophe models and analytics are used by some of the world's largest insurers, reinsurers, financial institutions, property companies and governments. We're part of one of the biggest and best global flood consultancies, employing over 500 experts who work with clients around the world. Our team is a collaboration of scientists who use their expertise to help keep us at the forefront of technical innovation.

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