

Big Data in Agriculture

Donghui Ma

Biosci (Thailand) Ltd.

ABSTRACT:

Innovations in Big Data and information technology disrupts many traditional businesses. This disruption happens in personal transportation (Uber) as well as changing our shopping behaviour (Amazon). The modern agriculture has the need to produce more food using fewer inputs, use fewer chemicals and less water to conserve the environment. Small scale farmers need to improve yield performance and large-scale farmers want yield boosts and cost savings. End consumers are demanding healthier, clean food and ingredients. Traditional business failed to balance the need but Big Data is causing the disruption to meet these needs.

With the vastly increased supply of information everywhere from the plant genome to water management, fertilization, climate, soil, machinery, and crop protection systems, there are many new ways to get and use data both in both crop genetics and farming practices.

This talk with focus on two main areas where big data could change the value chain:

- **Development of new crop varieties:** instead of going through the conventional process used to create successful crop varieties, the modern in silico genetic improvement approach is less costly, less labour intensive, and can reduce the breeding time from 10 years or more to a few years.
- **Precision Farming:** Big data takes advantage of information generated from precision farming and provide analytics, insights, and better decisions, which can then be deployed through precision farming techniques. Big data is changing the value chain since the access to big data is transferring power to the farmer and smaller companies, the innovation will change the business model of agriculture supply chain.