

## Chapter 7

# Agricultural Planning Risk

### ABSTRACT

*The method is applied to Farm Planning to manage the associated risk. DMAIC framework applies stochastic techniques. Stochastic optimisation determines the optimal land allocation strategies to maximise profit. Once the optimal strategies are resolved, every determined strategy is simulated. So, the profit and associated risk factors are stochastically calculated. Six Sigma process capability metrics are also calculated to measure the process performance of the mean profit distribution. Simulation results are analysed and sensitivity analysis is used to identify and quantify the main contributors to the profit variability. The optimal strategies are ranked and prioritised for management's attention based on their gain and associated risk factors. This will facilitate the management decision making in order to select the best strategy for implementation. The execution of the optimal plan is considered as an individual implemented project. Therefore, Project Management approach is used to control the plan execution.*

### INTRODUCTION

This chapter presents the Income Management application class of the method. It is applied in Agriculture to manage the risk of planning of a farm production for the next season.

Agriculture is a major human activity, which is the practice of farming, including cultivation of the soil for the growing of crops and the rearing of animals to provide food, wool, etc. Agribusiness is the business of agricultural

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production. It includes farming, farm machinery, agrichemicals, seed supply, processing and distribution, as well as marketing and retail sales. From commercial perspective, farming is the major aspect of agribusiness. Specifically, a farm is an area of land that is devoted primarily to agricultural processes with the primary objective of producing food and other crops.

Agribusiness and farm management generally comprises four functions: i) planning; ii) organising; iii) controlling; and iv) directing. Planning is to decide and establish a plan about what the business should. Organising is to make arrangements to accomplish the plan. Controlling is to get and analyse the feedback from the business to see if the goals set in the plan are accomplished. And directing is to implement the plan by leading to transform the plan in reality. Farms production strongly depends on the weather, which is uncertain, i.e. a major risk factor. Therefore, the key challenges of agribusiness and farm management are risk control and decision making under uncertainty.

A comprehensive book about Agribusiness Management was published by Barnard, Akridge, Dooley, Foltz and Yeager (2016). This book stated that today's food and agribusiness managers operate in a rapidly changing, highly volatile, international, high technology, consumer-focused world. The book helps prepare managers for a successful handling of food production and marketing. The text uses four specific approaches to help readers develop and enhance their capabilities as agribusiness managers. First, it offers a contemporary focus that reflects the issues that agribusiness managers face today and are likely to face tomorrow. Second, the book presents conceptual material in a pragmatic way with illustrations and examples that will help the reader understand how a specific concept works in practice. Third, the book has a decision-making emphasis, providing contemporary tools that readers will find useful when making decisions in the contemporary business environment. Finally, the book offers a pertinent set of discussion questions and case studies that will allow the reader to apply the material covered in real-world situations.

Beierlein, Schneeberger and Osburn (2014) in their book discuss the principles of agribusiness management. This book provides the vital insights and tools necessary to achieve success in a collaborative and interactive manner. It also presents a step-by-step approach that focuses on strategic planning and management including case studies that highlight the current trends and practices of agribusiness.

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