Preface

Although the global food production has increased in recent decades, the global food demand increases more rapidly than production. It has been reported by FAO that demand for cereals will increase by 70 % by 2050 as an outcome of both larger populations and higher per-capita consumption among communities with growing incomes. To meet higher demand, growing more food at affordable prices becomes even more important.

Agricultural proteomics can play a role in addressing the growing demand for food. The application of proteome science in agriculture has allowed researchers to identify a broad spectrum of proteins in living systems and associates them to many major traits. It may give clues not only about nutritional value, but also about yield production and food quality and how environments affect these factors. In recent years, technical improvements in the mass spectrometry, bioinformatics, protein extraction, and separation have made the high-throughput analysis of agricultural products feasible and the reproducibility of the technology has reduced errors in assaying protein levels. Meanwhile, the application of mass spectrometry-based quantification methods has become mainstream in recent year. The rapid advances of genome-sequencing tools also paved the way to sequence the full genome of many crops, animals, insects, and microorganisms. This provided Proteomics Scientist with a huge number of reference genome and genes for genome-wide proteome analysis.

An emerging field of the proteomics aimed to integrate knowledge from basic sciences to translate it into agricultural applications to solve issues related to economic values of farm animals, crops, food security, health, and energy sustainability. Given the wealth of information generated and to some extent applied in agriculture, there is a need for more efficient and broader channels to freely disseminate the information to the scientific community.

This book will cover several topics to elaborate how proteomics may enhance agricultural productivity. These include crop and food proteomics, farm animal proteomics, aquaculture, microorganisms, and insect proteomics. It will also cover

several technical advances, which may address the current need for comprehensive proteome analysis.

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