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PREFACE

Food and raw material for its production was generally produced via the traditional agriculture. On the other hand, novel chemicals were manufactured in the laboratory or extracted from plant and animal sources. However, as the world population is steadily increasing, there is a decrease in traditional agriculture productivity and concerns are also expressed over the damage inflicted to the environment and restrictions that might be enforced in food production. At the same time, there is an increasing demand for high quality agricultural products as well as for food ingredients related to both the traditional or newly discovered nutrients or phytochemicals.

Trends and developments in the area of plant biotechnology and bioengineering has allowed manipulation of genes and/or insertion of new genes, thus production of transgenic plants. Starting from the introduction of agronomic traits, particularly stress resistance to diverse environmental factors, process and sensory characteristics, food quality and production of novel varieties of plant-based products through genetic engineering, biotechnology is changing the agriculture and the concept of production of plant-based raw materials. Increasing attention is being paid on research for production of plants that can provide a wide array of food and non-food products. Perhaps the first non-food product that plant biotechnology would achieve is production of large scale custom-designed industrial oils, but the list of chemicals is long, ranging from oils and specific triacylglycerols to biopolymers, enzymes, blood components, among others.

This monograph assembles the latest developments in plant biotechnology as presented by lead scientists during the Fifth Chemical Congress of North America held in November 1997 in Cancun or subsequently solicited by the editors. It emphasizes the production of chemicals from higher plants, but also includes fundamental aspects of plant biochemistry. We are grateful to all contributors for their outstanding efforts that made the production of this state-of-the-art monograph possible.

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