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Nota di contenuto	Part I Tutorial -- 1 Microwave thermal and non-thermal processes -- 2 Plasma thermal and non-thermal technologies -- 3 High-voltage and pulsed power technologies -- 4 Agricultural Engineering -- Part II Microwave Application -- 5 Improvement and effective growth of plants' environmental stress tolerance on exposure to microwave electromagnetic wave effects -- 6 Food Processing -- 7 Stimulating the Aging of Beef with Microwaves -- 8 Controlling Weeds with Microwave Energy -- 9 Soil Modifications -- 10 Microwave application for animal feed processing to improve animal performance -- 11 Microwave heating for grain treatment -- Part III Plasma Applications -- 12 Growth enhancement effect of gene expression of plants induced by active oxygen species in oxygen plasma -- 13 Improvement of plant growth and control of cultivation environment using electrical stimuli -- 14 Promotion of reproductive growth of mushroom using electrical stimuli -- 15 Keeping freshness of agricultural products -- 16 Enzyme activity

control and protein conformational change -- 17 Plasma applications in microalgal biotechnology.

Sommario/riassunto

This book describes innovative agricultural methods using thermal and non-thermal microwave or plasma energies. Humans that were nomadic in the past can now stably obtain food by developing agriculture. Cities were formed as a result of remarkable development. Later, chemicals were introduced to agriculture to stabilize the food supply further. Natural products were initially used, but various artificial compounds have been developed for agriculture since the 1900s. To further improve crop productivity and diversification, gene recombination (genetic engineering) using biotechnology has progressed in recent years and continues to develop further. However, these technologies contain pesticide residues and pose safety risks. The innovative new agriculture explained in this book is based on the use of microwaves and plasma that do not rely on chemicals and genetic modification. This is one of the first books focusing on the agricultural usage of microwaves. In addition, it is a technical book that incorporates plasma into agriculture from this perspective. The book covers microwaves and plasmas, which are completely different fields. Thus, it will be attractive to many readers who want to acquaint themselves with these alternative technologies and implement them. This book will be useful to a broad audience including researchers and technicians at Universities and practitioners in industries. It is made accessible to readers across different fields by including abundant figures and by limiting the use of equations to the possible extent.