

SENESCENCE PROCESSES IN PLANTS

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The scientific and economic significance of plant senescence means that much effort has been made to understand the processes involved and to devise means of manipulating them agriculturally. During the past few years there has been considerable progress in this regard, especially in the molecular, genetic and genomic aspects. Senescence has a tremendous impact on agriculture. For example, leaf senescence limits crop yield and biomass production, and contributes substantially to post-harvest loss in vegetable and ornamental crops during transportation, storage and on shelves. In addition, proteins, antioxidants and other nutritional compounds are degraded during senescence. Senescing tissues also become more susceptible to pathogen infection, and some of the pathogens may produce toxins, rendering food unsafe. Mitotic senescence may also determine sizes of leaves, fruits and whole plants.

This volume summarizes recent progress in the physiology, biochemistry, cell biology, molecular biology, genomics, proteomics, and biotechnology of plant senescence. Beginning with a chapter on senescence-related terminology and our current knowledge of mitotic senescence in plants (a less well-studied area), the book focuses on post-mitotic senescence, and includes chapters addressing the senescence of leaves, flowers and fruits. Later chapters examine the development of various new biotechnologies for manipulating the senescence processes of fruit and leaves, some of which are approaching commercialization. The book is directed at researchers and professionals in plant molecular genetics, physiology and biochemistry.

The Editor

Professor Susheng Gan, Department of Horticulture, College of Agriculture and Life Sciences, Cornell University, Ithaca, New York, USA.

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