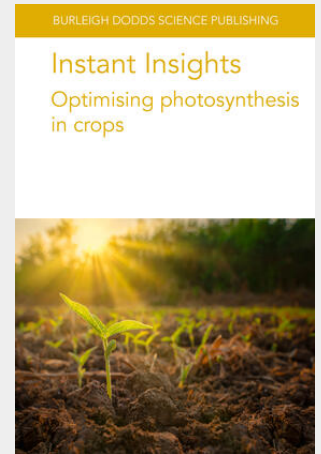


Instant Insights

Optimising photosynthesis in crops

This collection features five peer-reviewed reviews on optimising photosynthesis in crops. The first chapter reviews current understanding of the biochemistry, regulation and limitation of the C3 photosynthesis cycle in crops. It provides detailed discussions on CO₂ assimilation in C3 photosynthesis, as well as the carboxylation, reduction and regeneration phases of the C3 cycle. The second chapter considers the recent emergence of using phenotyping techniques to analyse crop functionality and photosynthesis. It reviews the relationship between photosynthesis, crop growth and stress response and explores phenotyping photosynthesis in varying environments. The third chapter discusses the process of modifying mesophyll conductance to optimise photosynthesis in crops. The chapter considers recent research efforts to manipulate the structure and composition of cells walls, membranes and liquid phases to achieve this. The fourth chapter explores improving photosynthesis in rice and details the need to optimise photosynthetic efficiency as a means of boosting yield ceilings in rice production. The final chapter reviews some of the key factors determining photosynthetic performance and explores the options for improving the photosynthetic capacity and efficiency of wheat by selecting for a range of important traits.

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