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| Altri autori (Persone) | SheehyJ. E<br>MitchellP. L (Peter L.)<br>HardyB |
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alleviation: theory1; Agricultural research and poverty alleviation: evidence; Key trends in the Asian rice economy Rice; Water scarcity; Conclusions; References; Notes
Catching up with the literature for C4 rice: what we know now and didn't then P.L. MitchellCurrent understanding of C4 photosynthesis; Molecular biology and genetic engineering of C4 photosynthesis; Use of Cleome; Rice transgenic for C4 photosynthetic enzymes; Better Rubisco for improved photosynthesis; Reflections on constructing C4 rice; References; Notes; SECTION 2: C4 RICE FROM THEORY TO PRACTICE; C4 photosynthesis: minor or major adjustments to a C3 theme? R.C. Leegood; Intercellular metabolite transport in C4 plants; Intracellular metabolite transport in C4 plants
Altered properties of enzymes of carbohydrate synthesisMitochondrial specialization; Regulation of C4 photosynthesis; C4 mutants; References; Notes; C4 photosynthesis and CO2 diffusion S. von Caemmerer, J.R. Evans, A.B. Cousins, M.R. Badger, and R.T. Furbank; Carbon isotope discrimination and CO2 diffusion; CO2 diffusion from intercellular air space to chloroplast stroma in C3 species; CO2 diffusion from intercellular air space to mesophyll cytosol in C4; CO2 diffusion across bundle sheath/mesophyll interface
Relationship between bundle sheath resistance to CO2 diffusion and leakiness of the bundle sheathEstimates of bundle sheath leakiness from measurements of carbon isotope discrimination; What are the possibilities for C4 rice?; Conclusions; References; Notes; Nuclear regulation of chloroplast development in C4 and C3 plants J.A. Langdale, M. Waters, E.C. Moylan, and A. Bravo-Garcia; Chloroplast development in the C4 plant maize; GLK genes in C4 and C3 plants; GLK gene function; C4 rice-wishful thinking or potential reality?; References; Notes
Balancing light capture with distributed metabolic demand during C4 photosynthesis J.R. Evans, T.C. Vogelmann, and S. von Caemmerer

Sommario/riassunto

Feeding Asia in the 21st century will require a second Green Revolution. However, unlike in the first generation, future yield increases will have to be grown using less water and nitrogen in a world of unfavorable climate change - this can only be done by increasing the efficiency of the photosynthetic system, i.e. developing a C4 rice plant. If and when achieved, it would be the first nonevolutionary example of reconstructing the primary metabolism of a plant. The impact of such a scientific achievement would be undeniable, but it requires either a superb feat of genetic engineering or forc