Energetics and Transport in Aquatic Plants

MBL Lectures in Biology, Volume 4

by J.A. Raven

Alan R. Liss; New York, 1984

587 pages. £67.00

This large book contains a wealth of information on the metabolism of aquatic plants and its related physiology. The benefits and problems of the aquatic habitat are comprehensively outlined in ten chapters which more than adequately cover the complete topic. The first three chapters lay an ecophysiological and biochemical foundation for the rest of the book. Chapters 4 and 5 consider many aspects of photosynthesis from energetics to carbon metabolism. This broad survey rightly considers photorespiration in higher plants as well as C_4 and crassulacean acid metabolism in relation to similar pathways in aquatic species. Indeed throughout the book the scope is broad and extends far beyond aquatic plants. Chapter 6 covers dark respiration (including the problems of anoxia and the suppression of 'dark' respiration in the light). Chapters 7 and 8 deal with transport across the plasmalemma and the role of the vacuole. The penultimate chapter discusses inter-cellular and long distance transport processes. The last chapter is an extensive summing-up.

The text is complex yet direct and clearly derives from a series of lectures. In addition to providing the information in considerable detail, there is much constructive critical discussion. The style is convoluted rather than simplistic (a pause for breath here and there would be most welcome, especially when we are whizzed through the pros and cons of lactic acid accumulation on pp.291–2 or of the complexities of photosynthetic efficiency on pp.177–8!). A number of controversial issues are alluded to (diagrams of Williams' alternative formulations of the oxidative and reductive pentose phosphate pathways are a case in point) but are given short shrift in the text. If such unorthodox schemes (particularly that for the reductive pathway) are to be included then they surely warrant adequate discussion.

It is a pity that there are no photographs and that, on the whole, the drawings are rather poor and the tables overcrowded. However, there are few substantial errors and overall this is a singularly thorough text on a specialised subject which has rarely been considered in such complete detail. This is no boring commonplace reference work. It is clearly the work of a single lively mind; it exudes personality, considered opinion and conceptual clarity. Aquatic plants are seen through clear waters! A wealth of sound information is presented in an entertaining fashion and is smattered with an idiosyncratic and often colloquial phraseology which will make it a pleasure for any research worker in the field to read.

Christine H. Foyer and Richard C. Leegood

PDF | Aquatic higher plants have morphologically and physiologically adapted to their water environment. Similar to terrestrial plants that have been | Find, read and cite all the research you need on ResearchGate.Â transport systems in aquatic plants. Most of the ion transport systems that are. located in the plasma membranes share similarities with both aquatic and terrestrial. Transportation in Plants is a vital process which helps in the movement of water and nutrients from the roots via stem to the leaves and other parts of the plants.Â The release and uptake of solute and water by individual cells. Let us have a detailed look at the process of absorption and transportation in plants. Also Read: Difference between Tracheids and Vessels. Water Absorption In Plants. Aquatic plants, also termed as hydrophytes or aquatic macrophytes, live within watery environments. In the ecosystem, aquatic plants serve as food and habitat for animals living in the sea and prevent shorelines, ponds and lakes from eroding by providing soil stability. Characteristics common to aquatic plants: 1. Most aquatic plants do not need cuticles or have thin cuticles as cuticles prevent loss of water.