

Plant Physiology: Mechanism and Functions

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Abstract

Plant physiology may be a sub discipline of botany concerned with the functioning, or physiology, of plants. Closely related fields include plant morphology (structure of plants), plant ecology (interactions with the environment), phyto chemistry (biochemistry of plants), cell biology, genetics, biophysics and biology. Fundamental processes like photosynthesis, respiration, plant nutrition, phyto-hormone functions, tropisms, nastic movements, photo periodism, photo morphogenesis, circadian rhythms, environmental stress physiology, seed germination, dormancy and stomata function and transpiration, both parts of plant water relations, are studied by plant physiologists. plant physiology includes the study of biological and chemical processes of individual plant cells. Plant cells have variety of features that distinguish them from cells of animals, and which cause major differences within the way that flowers behaves and responds differently from animal life. For instance, plant cells have a cell membrane which restricts the form of plant cells and thereby limits the pliability and mobility of plants. Plant cells also contain chlorophyll, a compound that interacts with light during a way that permits plants to manufacture their own nutrients instead of consuming other living things as animals do. plant physiology deals with interactions between cells, tissues, and organs within a plant. Different cells and tissues are physically and chemically specialized to perform different functions. Roots and rhizoids function to anchor the plant and acquire minerals within the soil. Leaves catch light so as to manufacture nutrients. For both of those organs to stay living, minerals that the roots acquire must be transported to the leaves, and therefore the nutrients manufactured within the leaves must be transported to the roots. Plants have developed variety of the way to realize this transport, like plant tissue, and therefore the functioning of the varied modes of transport is studied by plant physiologists.

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Biography

Professor of Agriculture and former Associate Dean and Director of the Center for Agriculture, the Massachusetts Agricultural Experiment Station and UMass Extension at UMass with over 40 years of professional activity in crop production and product evaluation both in the U.S. and in Asia (mostly China). Dr. Herbert is now Director of the Agricultural Innovation Working Group at UMass. He has received awards for outreach and research from farmers,

UMass and scientific societies. Dr. Herbert grew up on a dairy farm in New Zealand and received his BS in Agricultural Science and a PhD in Agronomy from the University of Canterbury in New Zealand. In 1978 he entered the U.S. with his wife, with little luggage and money, for a post-doc at Texas Tech University, before joining the faculty at UMass in 1979.