difficult to explain the stimulating effect of lower concentrations of Pi. The phosphate-treatment of whole apples delayed the increase of ethylene production in them for about 3 days (Fig 2). PLICH and SOBOLEWSKA (1982) found that the highest ethylene production by the apples corresponds to the lowest phosphorus content in their tissues.

So, the maintenance of a high level of phosphate in fruits should delay the production of ethylene and ,consequently, the apple ripening.

REFERENCES

CHALUTZ, E., MATTOO, A. K., FUCHS, Y.: Biosynthesis of ethylene: the effect of phosphate. — Plant Cell Environ. **3** : 349—356, 1980.

FISKE, C. M., SUBBAROW, Y.: The colorimetric determination of phosphorus. — J. biol. Chem. **66** : 375—400, 1925.

FUCHS, Y., MATTOO, A. K., CHALUTZ, A., ROT, I.: Biosynthesis of ethylene in higher plants: the metabolic site of inhibition by phosphate. — Plant Cell Environ. **4** : 291—295, 1981.

KATES, M.: Techniques of lipidology: isolation, analysis and identification of lipids. — In: WORK, T. S., WORK, E., (ed.): Techniques of Lipidology. Pp. 610. North Holland Publ. Co., Amsterdam 1972.

PLICH, H., SOBOLEWSKA, J.: Time course of inorganic phosphate content, phospholipids and ethylene production during the ripening of apples. — Fruit Sci. Rep. **9** : 143—152, 1982.

WATKINS, C. B., FERGUSON, J. B.: Ion relation of apple fruit tissue during fruit development and ripening. II. Phosphate uptake. — Aust. J. Plant Physiol. **8** : 249—257, 1981.

BOOK REVIEW

BARBER, S. A., BOULDIN, D. R. (ed.): ROOTS, NUTRIENT AND WATER INFLUX, AND PLANT GROWTH. (ASA Special Publication Number 49.) — Soil Sci. Soc. Amer., Crop Sci. Soc. Amer., Amer. Soc. Agron., Madison 1984. 136 pp. $ 16.75.

Within the last 30 years a great progress has been made towards understanding the basic mechanisms of water and nutrient uptake by plant roots and the importance of these transport processes for the plant growth and development. The physical and mathematical models significantly contribute to this progress. The present state of knowledge of this subject is reflected in this publication — the written version of the six invited papers presented at the symposium held at the 1982 annual meeting of the American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America in Anaheim.

The first paper deals with the structure of root cell membranes, the mechanisms of nutrient fluxes and the regulation of these fluxes in the intact plants. The partitioning and utilization of photosynthates by plant root systems is discussed in the second paper. The uptake of water by roots, its transport through plants and loss into the atmosphere are the main items of the third paper. The examples of experimental results as well as the models of water flow through the soil—plant—air continuum are included. The fourth paper describes the mathematical model of nutrient uptake and its dependence on root morphology and the verification of this model for the potassium, phosphorus and nitrogen uptake by six plant species. The fifth paper calls attention to the interaction between the roots and the rhizosphere — an additional complication which should be incorporated in the quantitative models of nutrient uptake. The final paper gives an overview of the significance of plant roots in determining crop yield.

This book will be important in stimulating the cooperation between plant and soil scientists and the research in an area that is of increasing significance.

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