CAN THE UPTAKE OF PHOSPHATES BY PLANTS BE IMPROVED?

Summary

Phosphorus is an important nutrient but usually it is at low availability in the soil — thus, it can limit plant growth and agricultural production. Plants have evolved various responses to adapt to low phosphorus nutrition – which is shortly summarized in this review. For example, roots secrete organic acids and different enzymes to rhizosphere, or can induce the transport system to improve the release (from the soil) and uptake of inorganic phosphate (Pi). Plants might control Pi nutrition by induction of mycorrhizae or by developing specific root structures — proteoid roots. Attempts to generate plants which may more efficiently acquire Pi from the soil have recently been made by several scientific groups. The usefulness of such transgenic plants, with improved Pi uptake and enhanced Pi mobilization, and possible application of these plants in agriculture are discussed.