UNIVERSIDAD Đ CÓRDOBA

Global Science Education and Research Seminars

Campus de Rabanales, Sala de Grados "Manuel Medina"

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Hans Lambers gained his PhD at the University of Groningen, the Netherlands. In 1979 he moved to Australia, where he worked as a Postdoc. In 1982 he returned to the Netherlands, to work as a postdoc, and then as Professor of Ecophysiology at Utrecht University since 1985. In 1998, he migrated to Australia. In 2003 he was elected to the Royal Netherlands Academy of Arts and Sciences (KNAW) and in 2012 to the Australia Academy of Science.

In the Netherlands, Hans studied ecophysiological aspects of variation in growth rate and productivity in higher plants. In Australia, he studied mineral nutrition of Australian plants. His main interests are to discover how some Australian plants manage to efficiently acquire phosphorus from depauperate soil and use it very efficiently.

Hans has published more than 375 refereed articles, with an average citation rate of over 38 per article; his Hirsch index is 59.

Prof. Hans Lambers
School of Plant Biology,
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Plant mineral nutrition in biodiversity hotspots

South-western Australia is a global biodiversity hotspot, where the greatest plant diversity is found on the most severely phosphorus-impoverished soils in kwongkan (low heath on sandplains). Mycorrhizas are symbiotic associations between plants and fungi that enhance plant phosphorus acquisition. Paradoxically, non-mycorrhizal plant families (e.g., Proteaceae) feature most prominently on the poorest soils, and these families are uncommon on soils containing more phosphorus. Almost all Proteaceae produce carboxylate-releasing cluster roots, which are capable of mobilising scarcely available phosphorus and micronutrients, including manganese. They effectively 'mine' these nutrients, as opposed to 'scavenging' them from the soil solution further away from the root surface, as mycorrhizas do. In addition to efficient acquisition of phosphorus from soil, south-western Australian Proteaceae species also use the acquired phosphorus very efficiently in photosynthesis. They also show a tremendous capacity to remobilise phosphorus from senescing leaves and contain a large amount of phosphorus in their seeds. The traits referred to here help explain the ecological success of non-mycorrhizal species on severely phosphorus-impoverished soils in south-western Australia. These same traits may also have allowed non-mycorrhizal families to diversify in these severely nutrient-impoverished environments. A very exciting question that remains to be explored further is why species with a superior phosphorus-acquisition strategy coexist with ones that are less effective at acquiring soil phosphorus. We have some answers, but future research will explore this in greater detail.