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Soil fertility and crop nutrition in the Mediterranean region: An international agricultural research center's perspective

Never in the history of mankind has the issue of feeding and clothing the earth's burgeoning population been so urgent. To achieve this goal in a sustainable manner without destruction of the resource base and the environment poses one of the greatest challenges we are faced with, and is one that calls for scientific ingenuity, allied to enabling policies and social considerations. Given the population and land use pressures are greatest in the developing, or less developed world, that is where development efforts will necessarily be focused. The international agricultural research centres have been in the vanguard of efforts to improve food production and livelihoods in vast areas of the underprivileged world. The Middle Eastern or Mediterranean region, despite its antiquity in terms of agricultural evolution and civilization, is a vast region with a harsh climate and limited land and water resources and where few countries achieve food self-sufficiency. The International Center for Agricultural Research in the Dry Areas (ICARDA), based in Aleppo, Syria, was established to address the urgent biophysical and social constraints to agricultural production; its mission was to collaborate with the national agricultural research programs of the various countries of the Mediterranean region. A pivotal aspect of the Center's research and development strategy has been soil management, mainly soil fertility, and plant nutrition. Over the past 4 decades, considerable strides were made in identifying the major crop nutrient deficiencies, particularly nitrogen and phosphorus and more recently micro-nutrients, especially zinc and boron. Much has been learned about diagnosing nutrient deficiencies, establishing a rational basis for fertilizer use, and for increasing nutrient use efficiency. While the presentation makes a comprehensive and integrated synthesis of the achievements in soil and crop nutrient research, it endeavors to provide a critical analysis of the agricultural sector in the region and the challenges that lie ahead. Given the prognosis of increasing drought in the region in the future, the implications will inevitably have social and political consequences..

Biography

John Ryan is a soil scientist who has spent most of his long career in international agriculture, mainly in the Middle East. An Irish citizen, he holds several degrees from University College Dublin (B.Agr.Sc., Ph.D., DSc) and MS in Agricultural Education from the University of Arizona. After being Fulbright Scholar and Research Associate at the University of Arizona, he served as Professor of Soil Science at the American University of Beirut, Professor of Agronomy at the University of Nebraska (based in Morocco), and as Soil Scientist at ICARDA. He has produced over 300 publication (refereed articles, books, book chapters) and about 200 abstracts, and has lectured extensively in many countries around the world. He has served as Commission Chair in the International Union of Soil Scientists and Chair of International Agronomy in the American Society of Agronomy (ASA). In recognition of his scientific achievements, he has been recognized as Fellow of ASA, Soil Science Society of America, and the Crop Science Society of America, and has received the international awards in all three societies. In addition, he has received the Soil Science Distinguished Award, the IUSS Honorary Member Award, the J.B. Benton Jones Award, Distinguished Citizen Award from the University of Arizona, and Fellow of the American Society for the Advancement of Science, IFA Crop Nutrition Award and the IPNI Science Award. He is currently based in Ireland.

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