
A Perspective on Soil Nutrients in Relation to Cropping Systems in the Middle East Region

John Ryan

International Center for Agricultural Research in the Dry Areas (ICARDA), Aleppo, Syria

ABSTRACT

Despite the antiquity of settled agriculture and civilization in the Middle East, the region is largely a food-deficit one, with drought due to limited and variable rainfall being the main cropping constraint. Despite such inherent drawbacks, much progress has been made in terms of developments in the agricultural sciences and applied research at the farmers' level, particularly in the past few decades. Notwithstanding the shortage of rainfall and water for irrigation, advances in cropping systems have been largely attributed mainly to three factors: increased irrigation and improved water use efficiency; better crop varieties; and the elimination of nutrient deficiencies as crop production constraints and the routine adoption of chemical fertilizers. As a consequence of our improved understanding of nitrogen and phosphorus in terms of soil dynamics and crop interactions, most countries of the West Asia-North Africa region had witnessed 10-20 fold increases in nutrient use in the past 20 years or so. Fortunately, most soils in the region are well supplied with available potassium reserves. As major elements were eliminated as crop growth constraints, the importance of new constraints such as micronutrients, particularly zinc and iron, emerged. Soil fertility and crop nutrition research gradually evolved to consider fertilization in a cropping systems context as well as developments in the direction of conservation tillage. With fertilization intensification came new concerns about environmental considerations as well as crop quality with respect to human nutrition. This presentation highlights accomplishments in soil and crop nutrition in the region and gives emphasis to perceived obstacles to more widespread fertilizer use and improved use efficiency in rainfed and irrigated agriculture. The probable future trends in soil fertility and crop nutrition must be seen in the context of global factors affecting agriculture as a whole.