
Preface

All terrestrial life ultimately depends on soil, energy, and water. Soils have always been central to human civilization and life. They are an integral part of the physical and cultural environment, and we may take them for granted and even tend to treat them contemptuously in the United Arab Emirates (UAE). The rise and fall of civilizations have been closely linked with the use and abuse of soil and water resources. There is little reason to believe that these linkages will disappear in the future. It is therefore important to evaluate soils for their quality and link them to appropriate uses and services. In this publication, information is provided on soil classification and how to key out taxa relevant to UAE soils.

The recent soil inventory of the United Arab Emirates revealed that the UAE landscape is covered mainly by low-lying sandy deserts, mega-barchan dunes, extensive coastal salt flats, and alluvial and gravelly plains in both the far west and the east. The recent soil surveys revealed that a rather uniform-looking desert landscape has, in fact, a diversity of subsurface features that help to categorize the soils into 74 soil series and their phases. These features confirm the soil diversity in terms of classification, chemistry, physics, mineralogy, fertility, suitability for different uses, and vulnerability to land degradation.

The objectives of this book are to provide information for keying out the soils of the United Arab Emirates into separate classes and to provide a guide to associated laboratory methods. The classification used predominantly is extracted from the 11th edition of the USDA-NRCS *Keys to Soil Taxonomy*, and sections relevant to the soils found in the UAE are included here.

Primarily, this key is designed to fit the soil system of the United Arab Emirates. Information not found in the USDA key has been added including criteria and classes for: (1) differentiating anhydritic soils from gypsic soils; (2) identifying “lithic” subgroups for Aquisalids and Haplosalids; (3) identifying “salidic” subgroups within the great groups of Gypsid, Calcids, Psammets, and Orthents; and (4) incorporation of phases for soil taxa. The classes for the newly identified

anhydrite soils in the UAE have been added at four different levels: the *anhydritic* subsurface diagnostic horizon and mineralogy class and the *Anhydritic Haplosalids* and *Anhydritic Aquisalids* subgroups. In addition, a horizon suffix of “aa” for layers with an accumulation of anhydrite has been incorporated. The concept of horizon suffix “k” also has an ad hoc expansion, beyond the official definition of pedogenic accumulations, to connote the simple presence of calcium carbonate as determined by effervescence in dilute hydrochloric acid. This usage is synonymous with the recently defined soil characteristic named “free carbonates” in the *Keys to Soil Taxonomy*. The added classes or features that are proposed for USDA *Soil Taxonomy* are designated with a “†” in the Table of Contents and are footnoted in the text. The classes are in different stages of review and approval for use in the USDA soil taxonomy system; however, discussions regarding final approval and incorporation of the additions are ongoing. Other additions such as “Phases of soil taxa” are unique to the *United Arab Emirates Keys to Soil Taxonomy* and are not proposed for addition to the USDA system.

This book will provide a mechanism for updating the current soil surveys and will facilitate the correlation of soils from new surveys within the UAE. Additionally, this book provides a source of information to help the international soil science community converse about UAE soils and their comparison to other soils. Commonality between classification systems used in different countries enhances linkages. These linkages allow countries with similar mapping and classification procedures and similar soils to transfer agriculture technology without conducting long-term experiments under similar environmental conditions.

We hope the countless number of users of soil surveys in the UAE and abroad will use this publication to learn about classification of the soils of the United Arab Emirates.

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United Arab Emirates Keys to Soil Taxonomy

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