

Soil Survey Technical Note No. 9

Populating Taxonomic Moisture Class and Subclass in NASIS

Purpose

The purpose of this technical note is to provide guidance in populating the data elements *taxonomic moisture class* and *taxonomic moisture subclass* in NASIS. The moisture class is shown in the Component Taxonomic Moisture Class table, and the subclass is shown in the Component table. It is useful to be able to query the database to select soils with particular moisture regimes. The taxonomic classification alone, however, is not always sufficient for this purpose because the soil moisture regime is not always described completely by the taxonomic classification. The two data elements are used not only in general queries that require information about soil moisture regimes but also in some NASIS forestry interpretations, such as seedling mortality.

Discussion

Taxonomic moisture class reflects the soil's moisture regime. In most instances, this information is contained within the taxonomic classification. For example, a Typic Haplustalf has an ustic moisture regime. A Typic Hapludalf is generally considered to have a udic moisture regime, although it could have a perudic regime. In these examples, the proper entries for taxonomic moisture class are ustic and udic (or possibly perudic), respectively. The entry for taxonomic moisture subclass for each would be "typic."

A taxonomic moisture subclass that is not "typic" reflects a taxonomic intergrade or extragrade. Some soils having a particular moisture regime are transitional to another regime (intergrades) or are grading away from the regime to which they are assigned (extragrades). An example of an intergrade is an Aquic Haplustalf. The taxonomic moisture subclass is aquic. An example of an extragrade is an Aeric Albaqualf. The taxonomic moisture subclass is aeric.

For many soils, the proper assignment of the taxonomic moisture subclass is less obvious. Consider Mollic Endoaqualfs and Udollic Endoaqualfs. The taxonomic moisture class is aquic for both. For the Mollic subgroup, the taxonomic moisture subclass is understood to be typic because the Aeric subgroup (the name of which indicates the only other moisture subclass to be used with aquic)

precedes the Mollic subgroup in the key, leaving typic as the only remaining choice. For the Udollic subgroup, the appropriate taxonomic moisture subclass is aeric because the Udollic subgroup criteria include the same moisture criteria as the moisture criteria for the Aerice subgroup (*Keys to Soil Taxonomy*, 9th ed., page 44).

In some instances, knowledge of the series concept is required. Consider Vertic Palexeralfs (*Keys to Soil Taxonomy*, 9th ed., page 80). Although it is clear that the taxonomic moisture class is xeric, the proper subclass is not apparent from taxonomy alone. The Vertic subgroup is first in the keying order, so members of this subgroup could be appropriately placed in a typic, aquic, oxyaquic, or other taxonomic moisture subclass. An example in which the taxonomic moisture class is not apparent is Oxyaquic Quartzipsammets (*Keys to Soil Taxonomy*, 9th ed., page 145). The subclass is oxyaquic, but you can determine if the soil has a xeric, ustic, or udic moisture regime only with knowledge of the series concept.

Some Mollisols require an understanding of the taxonomic criteria and the series concept when the taxonomic moisture class and subclass data elements are populated. Consider that Ustolls and Xerolls allow either an ustic moisture regime or an aridic regime bordering on ustic. Calciustolls can serve as an example (*Keys to Soil Taxonomy*, 9th ed., page 215). On the basis of the keying order, we can say that Typic Calciustolls have an ustic taxonomic moisture class and a typic subclass and that Udic Calciustolls have an ustic taxonomic moisture class and a udic subclass. Aridic Calciustolls have either an aridic taxonomic moisture class and an ustic subclass or an ustic taxonomic moisture class and an aridic subclass. You must consider the series concept to determine for sure. Also, although it may seem backwards at first glance, the Aridic subgroups of Xerolls, by definition, have an aridic taxonomic moisture class and a xeric subclass.

Summary

The NASIS data elements *taxonomic moisture class* and *taxonomic moisture subclass* are used in database queries that require information about soil moisture regimes. These data elements also are critical for generating some NASIS forestry interpretations. In many instances, the proper placement is apparent from the taxonomic formative elements. In some cases, the moisture regime, including intergrade or extragrade criteria, is not explicitly included in the taxonomic classification. In these cases, knowledge of the criteria for specific taxa, the keying order of great groups within the suborder or subgroups within the great group, or soil series concepts can help in determining the correct taxonomic moisture class and/or subclass.

Contact

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Reference

Soil Survey Staff, 2003. *Keys to Soil Taxonomy*, 9th edition. United States Department of Agriculture, Natural Resources Conservation Service. Available online at: http://soils.usda.gov/technical/classification/tax_keys/