

West Region NCSS Standards Committee Report

New Proposals for Changes to Soil Taxonomy—2018

Removing Inconsistencies in Terminology and Definitions of Organic Soil

Materials—author not stated

Proposal for Issue 1: Use a single a single value (12% or more SOC) to define OSM regardless if they are saturated or not.

The committee approves the proposal with change.

Although the committee agrees that the criteria for determining mineral vs. organic soil material in saturated soils (30 days or more, cumulative) appears to be unnecessarily complicated, the committee does not agree to using a value of 12% or more SOC for soils that are saturated for less than 30 days (See item 1. below).

The proposal investigates the trends of OC in wetland soils but fails to include soils that are not wet, in particular, forest soils with O horizons.

Forest soils such as Humicrypts that require a mollic epipedon (which is based, in part on depth from the mineral soil surface) would be affected by a decrease in the amount of OC carbon allowed for mineral soil materials. For example, a decrease in 8% OC would result in A horizons becoming O horizons, no longer meeting the depth requirement for a mollic epipedon. There are 103 Humicrypts listed in the OSD database that would need to be investigated for a change in classification. Other classifications that would potentially be affected are Mollic Haplocryalfs, Alfic Argicryolls or Typic Argicryolls, to name a few.

Further, the proposal fails to address other impacts or consequences to the overall system of Soil Taxonomy by not addressing the over 2,000 instances in *KST* where the terms “depth within/below the mineral soil surface” is used (e.g. endosaturation, episaturation, Aqualfs, Aquands, Aquents, Aquepts, Aquolls, PSCS, root-restricting depth, linear extensibility, etc.). Additionally, the proposal fails to address updating the Organic Soils section of the Soil Survey Manual.

As indicated in the current edition of *KST* (page 3), in reference to the mineral soil material definition (below), material with more OC than item 1 is intended for litter, and material with more OC than in item 2 is for peat or muck. *KST* adds further explanation by stating “*Leaf litter may rest on a lithic contact and support forest vegetation. The soil in this situation is organic only in the sense that the mineral fraction is appreciably less than half the weight and is only a small percentage of the volume of the soil.*”

Mineral soil material (less than 2.0 mm in diameter) either:

1. *Is saturated with water for less than 30 days (cumulative) per year in normal years and contains less than 20 percent (by weight) organic carbon; or*
2. *Is saturated with water for 30 days or more (cumulative) in normal years (or is artificially drained) and, excluding live roots, has an organic carbon content (by weight) of:*
 - a. *Less than 18 percent if the mineral fraction contains 60 percent or more clay; or*
 - b. *Less than 12 percent if the mineral fraction contains no clay; or*
 - c. *Less than 12 + (clay percentage multiplied by 0.1) percent if the mineral fraction contains less than 60 percent clay.*

Proposal for Issue 2: Use a single a single value, 5% or more SOC, to define mucky modified mineral soil material.

The committee rejects the proposal, as there is already a single value used to define mucky modified mineral soil material.

The latest versions of both the SSM (Soil Survey Manual) and the FBDSS (Field Book for Describing and Sampling Soils) provide single value criteria for the “Mucky” textual modifier for mineral materials. The criteria listed is “10% OM and <17% fibers”, which equates to 5.8 % OC.

Proposal for Issue 3: Define fibric, hemic, and sapric materials based on rubbed fiber content only.

The committee approves the proposal with change.

The committee agrees that it makes sense to simplify the definition of fibric, hemic and sapric materials. However, the proposal does not provide any background information as to why both of the requirements (pyrophosphate color index and rubbed fiber content) were included in the first place, and finds it hard to make an informed decision for full approval until the proposal is expanded to include this information.

Proposal for Issue 4: In Soil Taxonomy only use the terms sapric, hemic, and fibric to describe organic soil materials. These terms are to be used for mineral and organic soils.

The committee [rejects the proposal as written.](#)

The terms sapric, hemic and fibric refer to three kinds of organic soil materials, used only for organic soils, based on the type of plant materials and decomposition of the plant materials. They are not (and shouldn't be) interchangeable with horizon designations, texture modifiers, or terms used in lieu of texture.

These terms are used at the suborder level for Histosols and great group level for Gelisols. An Oi or Oe horizon in a forest soil (e.g. Typic Humicryepts) should not have to adhere to the fiber content criteria for fibric or hemic organic soil materials.

One analogy might be the use of the terms argillic or calcic. They refer to diagnostic horizons and are used at the suborder level in Aridisols and the great group level in Mollisols and Inceptisols (calcic). However, the terms argillic or calcic are not specified in the definition of Bt or Bk horizon suffixes. Horizon suffixes are not meant to be diagnostic. For example, having a Bt does not mean a diagnostic argillic horizon is present.

Further, this proposal fails to address other impacts or consequences to the overall system of Soil Taxonomy if these changes are made.

Proposed Revisions to Kandic and Oxic Horizon Criteria—Prepared by J.N. Shaw for
Soil Science Society of America – Soil Taxonomy Task Force

Proposal for Issue 1: Remove ECEC from kandic and oxic criteria.

The committee [approves the proposal without change.](#)

However, the proposed removal of ECEC from the definition of kandic/oxic diagnostic subsurface horizon should not be construed as a reason to omit 1N KCl extractable Al from routine measurements. ECEC, and specifically the quantity of extractable aluminum (by 1N KCl) on the exchange at native or near-native soil pH, has practical value for agronomic purposes (e.g. estimating lime requirement), provides pedogenic context (in lieu of true “unbuffered” CEC), and is diagnostic for various taxa. The primary benefit of removing the ECEC threshold should be simplification of the kandic/oxic definition.

Proposal for Issue 2: Revise clay increase criteria for relatively coarse textured surfaces for kandic to be consistent with argillic criteria.

The committee [rejects the proposal as written.](#)

The committee does not agree that changing the clay increase requirement from 4% to 3%, for Kandic horizons with less than 20 percent clay, promotes consistency between diagnostic kandic and argillic horizons. As can be seen in the excerpt from KST below (inconsistencies shown in red), the only requirement that is consistent between the two is for soils with more than 40 percent clay. Making the proposed 1% change and not any other changes, does not promote consistency.

Argillic Horizon

Required Characteristics

2. *If an eluvial horizon remains and there is no lithologic discontinuity between it and the illuvial horizon and no plow layer directly above the illuvial layer, then the illuvial horizon must contain more total clay than the eluvial horizon **within a vertical distance of 30 cm or less**, as follows:*
 - a. *If any part of the eluvial horizon **has less than 15 percent total clay** in the fine-earth fraction, the argillic horizon must contain at least **3 percent (absolute) more clay** (10 percent versus 13 percent, for example); or*
 - b. *If the eluvial horizon has **15 to 40 percent total clay** in the fine-earth fraction, the argillic horizon must have at least **1.2 times more clay** than the eluvial horizon; or*
 - c. *If the eluvial horizon has 40 percent or more total clay in the fine-earth fraction, the argillic horizon must contain at least 8 percent (absolute) more clay (42 percent versus 50 percent, for example).*

Kandic Horizon

Required Characteristics

2. *Has its upper boundary:*
 - a. *At the point where the clay percentage in the fine-earth fraction is increasing with depth **within a vertical distance of 15 cm** and is either:*
 - (1) **4 percent or more (absolute)** higher than that in the overlying horizon if that horizon has **less than 20 percent total clay** in the fine-earth fraction; or
 - (2) **20 percent or more (relative)** higher than that in the overlying horizon if that horizon has **20 to 40 percent total clay** in the fine-earth fraction; or
 - (3) **8 percent or more (absolute)** higher than that in the overlying horizon if that horizon has more than 40 percent total clay in the fine-earth fraction; and

Other Proposals for Changes to Standards—2018

Flooding, Ponding and Continuous Inundation—author not stated

Proposal for changes to NSSH and NASIS:

The committee [approves the proposal with change](#).

- The committee would like justification for the use of 0.6 dS/m as the threshold between fresh and brackish water.
- The committee would like to see additional types of continuous inundation other than permanent.
- The committee requests the addition of a new field for populating how the flooding and ponding were determined (e.g. FEMA map citation, hydrologic study citation, professional estimate based on landform and vegetation, etc.).