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NATIONAL SOIL TAXONOMY HANDBOOK
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Purpose. To distribute current amendments to Soil Taxonomy, Agriculture Handbook 436.

Effective Date. These amendments and revisions are effective when received.

Filing instructions. File this copy of the changes in the 3-ring binder with Issues Nos. 1 through 13. It is suggested that you keep this binder with the Soil Taxonomy volume for easy reference.

Replace 615 "Contents" dated July 1989 with the enclosed "Contents" dated January 1991. Replace page v of "Index to pages of Soil Taxonomy" dated July 1989 with the enclosed page v of the index. File pages 615-389 to 615-405 following page 615-388.

Supplementation. States and NTC's may not supplement the handbook.

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Enclosures

DIST: NSTH



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615.64 Frigid Ultisols

This amendment allows Ultisols and Ultic intergrades to have any temperature regime.

Page 75, column 1, Ultisols, line 7. Change the comma following the word "horizons" to a period and delete "and a mean annual soil temperature higher than 8° C (47° F)."

has a mean annual soil temperature lower than 8° C".

Page 347, column 1, Alfic Haplorthods, line 3. Delete "either" and substitute "a".

Page 347, column 1, Alfic Haplorthods, line 4. Delete " or a frigid temperature regime".

Page 347, column 1, Aqualfic Haplorthods, lines 2 & 3. Delete "either" and substitute "a".

regime, ".

Page 95, column 1, Definition, item (1). Delete "(1) A frigid, isofrigid or colder temperature regime;" and renumber items (2) and (3) as (1) and (2).

Page 95, column 2, item b., lines 3 & 4. Delete "have a frigid or colder temperature regime or".

Page 96, column 2, item 7.b. Delete "b. A frigid, isofrigid or colder temperature regime;" and renumber item "c." as item "b".

Page 206, column 2, line 11. Delete " or have a frigid temperature regime".

Page 206, column 2, line 23. Delete ", and have a mesic or warmer temperature regime".

Page 206, column 2, Description of subgroups, Alfic Haplorthods, lines 5 & 6. Delete "Frigid ortho-

4.

Delete " or a frigid temperature regime,".

Page 347, column 2, Ultic Haplorthods, lines 3 & 4. Delete " both" and " and a mesic or warmer temperature regime".

Page 349, column 1, line 31. Delete " warmer than frigid or isofrigid".

Page 349, column 2, item 2. Delete "2. Have a mesic, isomesic, or warmer temperature regime;" and renumber item "3." as item "2".

Page 350, column 1, line 7. Delete "a. Have a mesic, isomesic, or warmer temperature regime;" and renumber "b." and "c" as "a" and "b".

Page 350, column 1, item 2., lines 2 & 3. Delete ", must have a mesic, isomesic, or warmer soil temperature regime;"

615.64

NSTH 615.62 page 615-382, item GDCJ 1., (*Soil Taxonomy* page 371). Delete "mesic or thermic," and replace with "thermic, mesic, or colder,".

NSTH 615.62 page 615-383, column 1, item 9.a., (*Soil Taxonomy* page 371). Delete "mesic or thermic," and replace with "thermic, mesic, or colder,".

Page 372, column 2, Xerults, line 10. Delete "or mesic" and substitute ", mesic, or frigid".

615.65 Glossic Horizon Amendment

Page 33, column 2, line 44. Following "an albic horizon," add "a glossic horizon," and delete "tonguing or".

Page 44, column 2, Albic horizon. Delete description of the "albic horizon" and substitute the following descriptions:

"Albic horizon"

The albic (*L. albus*, white) horizon is an eluvial horizon 1.0 cm or more thick containing more than 85 percent by volume albic materials (defined later). It usually occurs below an A horizon but may be at the mineral soil surface. Under the albic horizon there is usually an argillic, cambic, kandic, natric, or spodic horizon or a fragipan. The albic horizon may lie between a spodic horizon and either a fragipan or an argillic horizon; or it may lie between an argillic or kandic horizon and a fragipan. It may lie between a mollic epipedon and an argillic or natric horizon, or between a cambic horizon and an argillic, kandic, or natric horizon or a fragipan. The albic horizon may separate horizons which, if together, would meet the requirements for a mollic epipedon. It may separate lamellae that together meet the requirements for an argillic horizon; these lamellae are not considered to be part of the albic horizon.

In some soils the horizon underlying the albic horizon is too sandy or too weakly developed to have the levels of accumulation required for a spodic, argillic, kandic, or natric horizon. In some soils the albic horizon is underlain by a lithic or paralithic contact, or another relatively impervious layer that produces a perched water table with stagnant or moving water.

Pedon 11 has an albic horizon that extends from a depth of 10 cm to 36 cm below the surface. Plate 6D illustrates the appearance of an albic horizon overlying a glossic (defined below) and an argillic horizon. Plate 4C shows a soil with an albic horizon overlying a spodic horizon. Plate 11D illustrates a soil in which an albic horizon overlies an argillic horizon and separates horizons that together would meet the requirements for a mollic epipedon.

Glossic horizon

The glossic (*Gr. glossa*, tongue) horizon is a soil layer 5 cm or more thick which shows evidence of the degradation of an argillic, kandic, or natric

horizon. It consists of specific (15 to 85 percent) volumes of both albic materials (described later) and of remnants of an argillic, kandic, or natric horizon. Degradation proceeds with clay and free iron oxides being removed, first from the exterior of peds and then progressing toward the interior. This process leaves albic materials and remnants of the argillic, kandic or natric horizon in the glossic horizon. In early stages of that development, the peds of the remnant argillic, kandic, or natric horizon still form structural units that extend through the glossic horizon. In later stages, some of these structural units no longer extend all the way through the horizon. In the most advanced stages remnant peds are completely surrounded by albic materials. The boundary between the illuvial and eluvial parts of the glossic horizon is either abrupt or clear, and either irregular or broken.

The glossic horizon usually occurs between an albic horizon and an underlying argillic, kandic, or natric horizon or a fragipan. It can occur between an argillic, cambic, or kandic horizon and a fragipan. In the early stages of the degradation process a glossic horizon can be within an argillic, kandic, or natric horizon, or within a fragipan if that fragipan shows evidence of the degradation of an argillic horizon. An albic horizon may be below, or between subhorizons of, the glossic horizon.

Argillic horizons consisting of lamellae and intervening albic materials are not within the concept of the glossic horizon.

In summary, a glossic horizon:

1. Is 5 cm or more thick;
2. Consists of 15 to 85 percent (by volume) albic materials throughout; *and*
3. Has 15 to 85 percent (by volume) remnants of an argillic, kandic, or natric horizon throughout."

Page 47, column 2, line 13. Delete "may be tonguing or interfingering of albic material, which are" and replace with "a glossic horizon or interfingering of albic material, which is".

Page 64, column 1, **Tonguing and interfingering.** Delete the section on "Tonguing and Interfingering" and replace with the following:

"Albic materials and interfingering of albic materials"

Albic materials

Albic (*L. albus*, white) materials are soil materials with a color that is largely determined by the color of the primary sand and silt particles, rather than by the color of their coatings. The definition implies that clay and/or free iron oxides have been removed from the materials, or the oxides have been segregated to such an extent that the color of the materials is largely determined by the color of the primary particles.

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The color value, dry, of albic materials is 5 or more and the value, moist, is 3 or more; however, if the value, dry, is 5, then the value, moist, has to be 4 or more. If the value, dry, is 7 or more, or the value, moist, is 6 or more, the chroma is 3 or less either dry or moist. If the value, dry, is 5 or 6, or the value, moist, is 5 or less, the chroma is 2 or less either dry or moist; however, a chroma of 3 is permitted if the parent

Page 92, column 2, item F., lines 2 & 3. Delete "tongues of albic material in the argillic horizon that have" and replace with "a glossic horizon that has".

Page 95, column 1, last line. Delete "tongues of albic material in the argillic horizon that have" and replace with "a glossic horizon that has".

chroma is due to the color of uncoated silt or sand grains.

Relatively unaltered layers of light-colored sand, volcanic ash, or other materials deposited by wind or water are not considered to be albic materials although they may have the same color and apparent morphology. These deposits are parent materials which have not had clay and/or

tongues of albic material in the argillic horizon that have" and replace with "or have a glossic horizon that has".

Page 96, column 2, lines 6 & 7. Delete "Tongues of albic material in the argillic horizon that have" and replace with "A glossic horizon that has".

Page 109, column 2. Key to great groups, item IAF.

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Page 115, column 1, Ochraqualfs, Definition, item 2.
Delete "tonguing of albic materials in the argillic" and replace with "a glossic".

Page 121, column 1, line 14. Delete "Tongues of albic materials are permitted in the argillic horizon." and replace with "A glossic horizon is permitted."

Page 118, column 2, line 8. Delete "albic materials

Page 119, column 2, item IBA, lines 4 & 5. Following the words "that have" add "a glossic horizon or" and delete "tonguing or".

Page 119, column 2, line 27. Delete "tonguing" and replace with "glossic horizon".

Page 119, column 2, line 30. Delete "tonguing of albic materials in the upper part of the argillic" and replace with "a glossic".

Page 120, column 1, line 2. Delete "tonguing" and replace with "glossic horizon".

NSTH 615.62, page 615-216, item IBDH (*Soil*

glossic".

Page 121, column 1, line 39. Delete "are no" and replace with "is no glossic horizon nor" and delete "tongue or".

NSTH 615.62, page 615-217, item IBEE. (*Soil Taxonomy* page 121). Delete "tongues of albic materials in the argillic horizon (interfingering is permitted)." and replace with "a glossic horizon."

NSTH 615.62, page 615-217 Item IBEJ. (*Soil Taxonomy* page 121). Delete "tongues of albic materials in the argillic horizon (interfingering is permitted)." and replace with "a glossic

"glossic horizon that commonly has tongue-like projections of albic materials".

Page 123, column 1, line 34. Delete "are no albic

Page 128, column 1, line 40. Delete "deep wide tongues of albic materials" and replace with "a glossic horizon".

NSTH 615.62, page 615-219, item IBFF (*Soil Taxonomy* page 123). Delete "tongues of albic materials in the argillic" and replace with "a glossic".

NSTH 615.62, page 615-219, Definition of Typic Glossoboralfs, item 2. (*Soil Taxonomy* page 123). Delete "tongues of albic materials in the argillic" and replace with "a glossic".

Page 123, column 2, line 42. Delete "an argillic horizon that has tongues of albic materials" and replace with "a glossic horizon".

Page 124, column 1, line 2. Delete "tongues or fingers" and replace with "a glossic horizon, interfingering".

glossic horizon".

Page 128, column 1, line 58. Delete "tongues of albic materials in the argillic" and replace with "a glossic".

NSTH 615.46, page 615-161, line 1 (*Soil Taxonomy* page 128). Delete "tongues of albic materials in the argillic" and replace with "a glossic".

NSTH 615.46, page 615-161, line 27 (*Soil Taxonomy* page 128). Delete "deep wide tongues of albic materials that at least extend through the upper 15 cm and may extend through the horizon. Tongues constitute 15 percent or more of the matrix in that part." and replace with "a glossic horizon that is 15 cm or more thick and may extend through the horizon."

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2. Is an eluvial horizon (E) and has 3 or more percent (absolute) less clay than both the overlying and underlying horizons.

Glossic Fragiudalfs"

NSTH 615.62, page 615-221, Definition of Typic Fragiudalfs, item 2. (*Soil Taxonomy* page 129). Change item 2. to read as follows:

"2. Do *not* have, immediately above the fragipan, a layer 5 cm or more thick that:

a. Has skeletons of clean silt and sand on faces of primary pedes that constitute 1 percent or more (by volume) of the layer;
or

b. Is an eluvial horizon (E) and has 3 or more percent (absolute) less clay than both the overlying and underlying horizons;"

NSTH 615.62, page 615-221, item IEDD (*Soil Taxonomy* page 129). Delete "tongues of albic materials that extend through at least the upper 50 cm of the argillic horizon." and replace with "a glossic horizon that is 50 cm or more thick".

NSTH 615.62, page 615-221, Definition of Typic Glossudalfs, item 2. (*Soil Taxonomy* page 129). Delete "tongues of albic materials that extend through at least the upper 50 cm of the argillic horizon." and replace with "a glossic horizon that is 50 cm or more thick".

Page 129, column 1, line 29. Delete "tongues of albic materials that extend 50 cm or more into the argillic horizon and constitute 15 percent or more

NSTH 615.38(a), page 615-62, line 33 (*Soil Taxonomy* page 133). Delete "tongues of albic materials in the argillic" and replace with "a glossic".

NSTH 615.38(a), page 615-63, line 45 (*Soil Taxonomy* page 133). Delete "tongues of albic materials in the argillic" and replace with "a glossic".

NSTH 615.62, page 615-226, item IEBB. (*Soil Taxonomy* page 133). Delete "tonguing", replace with "a glossic horizon", and delete "more than 2.5 cm".

NSTH 615.62, page 615-226, Definition of Typic Natrustalfs, item 4. (*Soil Taxonomy* page 133). Delete "tonguing", replace with "a glossic horizon", and delete "more than 2.5 cm into the natric horizon".

Page 133, column 2, line 30. Delete "tonguing" and replace with "a glossic horizon".

Page 133, column 2, line 32. Delete "tonguing" and replace with "glossic horizon".

Page 133, column 2, line 39. Delete "that tongue or", and following "These soils have" add "a glossic horizon or".

Page 150, column 1, Natric Haploxeralfs. Change to read as follows:

"Natric Haploxeralfs.—These soils are like Typic Haploxeralfs except they have 15 percent or more saturation with sodium in some part of the argillic horizon. The argillic horizon of these soils would be a natric horizon if it had prismatic or columnar structure or if it had blocky

NSTH 615.62, page 615-326, column 1, line 2 (*Soil Taxonomy* page 291). Delete "tonguing" and replace with "a glossic horizon".

615.62, Page 615-328, item HGBF, line 1 (*Soil Taxonomy* page 296). Change "40 cm" to "50 cm".

Page 291, column 2, line 1. Delete "tongue or", and following "do not have" add "a glossic horizon

615.62, Page 615-359, CAEG, item 2 (*Soil Taxonomy* page 339). Change item 2. to read as follows:

or".

Page 291, column 2, line 57. Delete "or tongues", and following "in the form of" add "a glossic horizon or".

"2. In more than 50 percent of each pedon, a spodic horizon in which all subhorizons have a ratio of free iron (by dithionite-citrate) to carbon (both elemental) of 0.2 or more."

NSTH 615.62, page 615-341, item HFRF (*Soil*

615.62, Page 615-363, column 1, line 38 (*Soil*