

# FIELD INDICATORS OF HYDRIC SOILS IN LRR K, L, M, N, O, P – ILLINOIS

Adapted from VER 6.0, 2006 – Can be used in all Illinois LRRs, unless otherwise stated.

**1. Histosol.** Classifies as a Histosol.

Histosol User Notes: A Histosol has 16 inches or more of the upper 32 inches as organic soil material. These materials include muck (Sapric, soil material), mucky peat (Hemic, soil material), or peat (Fibric soil material).

**A2. Histic Epipedon.** A histic epipedon underlain by mineral soil with chroma 2 or less.

Histic Epipedon User Notes: Surface horizon of organic material 8 inches or more thick. Aquic conditions or artificial drainage are required.

**A3. Black Histic.** A layer of peat, mucky peat, or muck 8 inches or more thick starting within the upper 6 inches of the soil surface having hue 10YR or yellower, value 3 or less, chroma 1 or less underlain by mineral soil material with chroma 2 or less.

Black Histic User Notes: Does not require proof of aquic conditions or artificial drainage like A2. Histic Epipedon.

**A4. Hydrogen Sulfide.** A hydrogen sulfide odor within 12 inches of the surface.

Hydrogen Sulfide User Notes: This “rotten egg smell” indicates the sulfur in the soil has been reduced and therefore the soil is anaerobic.

**A5. Stratified Layers.** Stratified layers in the upper 6 inches. At least one layer has a value 3 or less with chroma 1 or less and/or it is muck, mucky peat, peat, or mucky modified mineral texture. The remaining layers have chroma 2 or less.

Stratified Layers User Notes: Many alluvial soils have stratified layers at the required depths but lack chroma 2 or less in the remaining layers. This indicator may occur in any type soil material.

**A6. Organic Bodies.** *For use in LRR P.* Presence of 2% or more organic bodies of muck or mucky modified mineral texture, approximately 0.5-1 inch in diameter, starting within 6 inches of the soil surface. In some soils the organic bodies are smaller than 0.5 inches.

Organic Bodies User Notes: The content of organic carbon should be known before this indicator is used. Hemic and fibric material do not meet the requirements, nor does partially decomposed root material.

**A7. 5 cm Mucky Mineral.** *For use in LRR P.* A layer of mucky modified mineral soil material 2 inches (5 cm) or more thick starting within 6 inches of the soil surface.

Mucky Mineral User Notes: “Mucky” is a USDA texture modifier for mineral soils. The organic carbon content ranges from 5% to 18%.

**A9. 1 cm Muck.** *For use in LRR P. For testing in LRR O.* A layer of muck 0.5 inches (1 cm) or more thick with value of 3 or less and chroma of 1 or less starting within 6 inches of the soil surface.

1 cm Muck User Notes: Organic soil material is called muck if the material has sufficiently decomposed to limit the recognition of plant parts. Muck is sapric material with at least 12 to 18 percent carbon. Mucky peat and peat do not qualify. The muck layer may occur at any depth in the upper 6 inches.

**A10. 2 cm Muck.** *Used in LRR L & M. For testing in LRR K.* A layer of muck 2 cm (0.75 inches) or more thick with value 3 or less and chroma 1 or less, starting within 6 inches of the soil surface.

2 cm Muck User Notes: See 1 cm Muck User Notes above.

**A11. Depleted Below Dark Surface.** A layer with a depleted or gleyed matrix that has 60% or more chroma 2 or less starting within 12 inches of the soil surface that has a minimum thickness of either: (a) 6 inches, or (b) 2 inches if the 2 inches consists of fragmental soils material. Loamy/clayey layer(s) above the depleted or gleyed matrix must have value 3 or less and chroma 2 or less. Sandy layer(s) above the depleted or gleyed matrix must have value 3 or less, chroma 1 or less, and at least 70% of the visible soils particles must be covered, coated, or similarly masked with organic material.

Depleted Below Dark Surface User Notes: This indicator often occurs in Mollisols but also applies to soils with umbric and dark colored ochric epipedons. See also Depleted Matrix User Notes.

**A12. Thick Dark Surface.** A layer at least 6 inches thick with a depleted or gleyed matrix that has 60% or more chroma 2 or less starting below 12 inches of the surface. The layer(s) above the depleted or gleyed matrix have a value 2.5 or less and chroma 1 or less to a depth of 12 inches and value 3 or less and chroma 1 or less in any remaining layer above the depleted or gleyed matrix. Any sandy material above the depleted matrix must have at least 70% of the visible soil particles must be covered, coated, or similarly masked with organic material.

Thick Dark Surface User Notes: The soil has a black surface layer 12 inches or more thick and has value 3 or less, chroma 1 or less in any remaining layer above a depleted or gleyed matrix. See also Depleted Matrix User Notes.

**S1. Sandy Mucky Mineral.** A mucky modified sandy mineral surface layer 2 inches or more thick starting within 6 inches of the soil surface.

Sandy Mucky Mineral User Notes: “Mucky” is a USDA texture modifier for mineral soils. The organic carbon content ranges from 5% to 14% for sandy soils.

**S3. 5 cm Mucky Peat or Peat.** *For use in LRR M.* A layer of mucky peat or peat 5 cm (2 inches) or more thick with value 3 or less and chroma 2 or less, starting within 6 inches of the soil surface and underlain by sandy material.

5 cm Mucky Peat or Peat User Notes: Organic soil material is called peat if almost all of the plant fibers remain. Mucky peat is intermediate in decomposition between peat and muck.

**S4. Sandy Gleyed Matrix.** A gleyed matrix which occupies 60% or more of the layer within 6 inches of the soil surface.

Sandy Gleyed Matrix User Notes: Gley colors are not synonymous with gray colors. Gley colors are those colors that are found on the gley page of the Munsell color charts.

**S5. Sandy Redox.** A layer starting within 6 inches of the soil surface that is at least 4 inches thick and has a matrix chroma 2 or less with 2% or more distinct or prominent redox concentrations as soft masses and/or pore linings.

Redox Concentrations User Notes: Redox concentrations include iron and manganese masses (reddish mottles) and

pore linings. Included within this concept of redox concentrations are iron/manganese bodies as soft masses with diffuse boundaries.

**S6. Stripped Matrix.** A layer within 6 inches of the surface in which iron/manganese oxides and/or organic matter have been stripped from the matrix exposing the primary base color of soil materials. The stripped areas and the translocated oxides and/or organic matter form a faint, diffuse splotchy pattern of two or more colors. The stripped zones are 10% or more of the volume and rounded and 0.5 to 1 inches in diameter.

Stripped Matrix User Notes: Commonly the splotches of color have value 5 or more and chroma 1 and/or 2 (stripped) and chroma 3 and/or 4 (unstripped). The matrix may lack the 3 and/or 4 chroma material.

**S7. Dark Surface.** *For use in LRR N and P.* A layer 4 inches or more thick starting within 6 inches of the surface and with a matrix value of 3 or less and chroma of 1 or less. At least 70% of the visible soil particles must be coated with organic material. The matrix of the layer directly below the dark layer must have chroma of 2 or less.

Dark Surface User Notes: The content of organic matter is less than is required to be "mucky". A 10X hand lens is a valuable aid.

**S8. Polyvalue Below Surface.** *For testing in LRRs K and L.* A layer with value of 3 or less and chroma of 1 or less starting within 6 inches of the surface, and underlain by a layer(s) in which translocated organic matter unevenly covers the soil, forming a diffuse splotchy pattern.

Polyvalue User Notes: This indicator applies to soils with a very dark gray or black surface or near surface layer that is <10 inches thick and is underlain by a layer in which organic matter has been differentially distributed by water movement.

**S9. Thin Dark Surface.** *For testing in LRRs K and L.* A layer 2 inches or more thick within the upper 6 inches of the soil with value of 3 or less and chroma of 1 or less.  $\geq 70\%$  of the visible soil particles must be coated by organic matter. This layer is underlain by a layer with value of 4 or less and chroma of 1 or less to a depth of 12 inches or to a spodic horizon.

Thin Dark Surface User Notes: This indicator applies to soils with a very dark gray or black surface or near surface layer that is 2 or more inches thick and is underlain by a layer in which organic matter has been leached downward and evenly distributed in the E horizon, commonly in Spodosols, but not required.

**F1. Loamy Mucky Mineral.** A mucky modified mineral surface layer 4 inches or more thick starting within 6 inches of the soil surface.

Loamy Mucky Mineral User Notes: "Mucky" is a USDA texture modifier for mineral soils. The organic carbon is at least 8 percent but can range up to 18 percent.

**F2. Loamy Gleyed Matrix.** A gleyed matrix that occupies 60% or more of a layer within 12 inches of the surface.

Loamy Gleyed Matrix User Notes: Gley colors are those colors that are found on the gley page. They have hue of N, 10Y, 5GY, 10GY, 5G, 10G, 5BG, 10BG, 5B, 10B, or 5BP with value 4 or more. The gleyed matrix only has to be present within 12 inches of the surface.

**F3. Depleted Matrix.** A layer that has a depleted matrix with 60% or more chroma 2 or less and that has a minimum thickness of either:

- a. 2 inches if it is entirely within the upper 6 inches of the soil, or
- b. 6 inches starting within 10 inches of the soil surface

Depleted Matrix User Notes: Redox concentrations, including iron and manganese soft masses and/or pore linings are required in soils with matrix value 4/1, 4/2, and 5/2. A, E, and calcic horizons may have low chromas and high values and may be mistaken for a depleted matrix; however, they are excluded unless the soil has 2% or more distinct or prominent redox concentrations. The low chroma matrix must be a result of wetness and not a relict or parent material feature.

**F6. Redox Dark Surface.** A layer at least 4 inches thick entirely within the upper 12 inches of the mineral soil that has:

- a. matrix value 3 or less and chroma 1 or less and 2% or more distinct or prominent redox concentrations as soft masses or pore linings, or
- b. matrix value 3 or less and chroma 2 or less and 5% or more distinct or prominent redox concentrations as soft masses or pore linings.

Redox Dark Surface User Notes: Redox concentrations in high organic matter mineral soils (Mollisols) are often difficult to see. In some instances, drying of the samples makes the concentrations (if present) easier to see.

**F7. Depleted Dark Surface.** Redox depletions, with value 5 or more and chroma 2 or less, in a layer at least 4 inches thick entirely within the upper 12 inches of the mineral soil and has:

- a. matrix value 3 or less and chroma 1 or less and 10% or more redox depletions, or
- b. matrix value 3 or less and chroma 2 or less and 20% or more redox depletions.

Depleted Dark Surface User Notes: Care should be taken not to mistake mixing of an E or calcic horizon into the surface layer as depletions.

**F8. Redox Depressions.** In closed depressions subject to ponding, 5% or more distinct or prominent redox concentrations occurring as soft masses or pore linings in a layer that is 2 inches or more thick and is entirely within the upper 6 inches of the soil.

Redox Depressions User Notes: This indicator occurs on depressional landforms, such as potholes. It does not occur in micro depressions on convex or plane landscapes.

**F12. Iron-Manganese Masses.** *For use in LRRs N, O, P; for testing in LRR M.* On flood plains, a layer 4 inches or more thick with 40% or more chroma 2 or less and 2% or more distinct or prominent redox concentrations occurring as soft iron/manganese masses with diffuse boundaries. The layer occurs entirely within 12 inches of the surface. Fe/Mn masses have value and chroma of 3 or less. The thickness requirement is waived if the layer is the mineral surface layer.

Iron-Manganese Masses User Notes: The Fe/Mn masses are generally small (2 – 5 mm) and have value and chroma of 3 or less. These masses may not be relict.

**F13. Umbric Surface.** *For use in LRRs P and MLRA 122 of N.* In depressions a layer 10 inches or more thick starting within 6 inches of the surface in which the upper 6 inches has value of 3 or less and chroma of 1 or less and in which the lower 4 inches has the same colors as those described above or any other color that has chroma of 2 or less.

Umbric Surface User Notes: The thickness requirements may be slightly less than those for an Umbric epipedon.