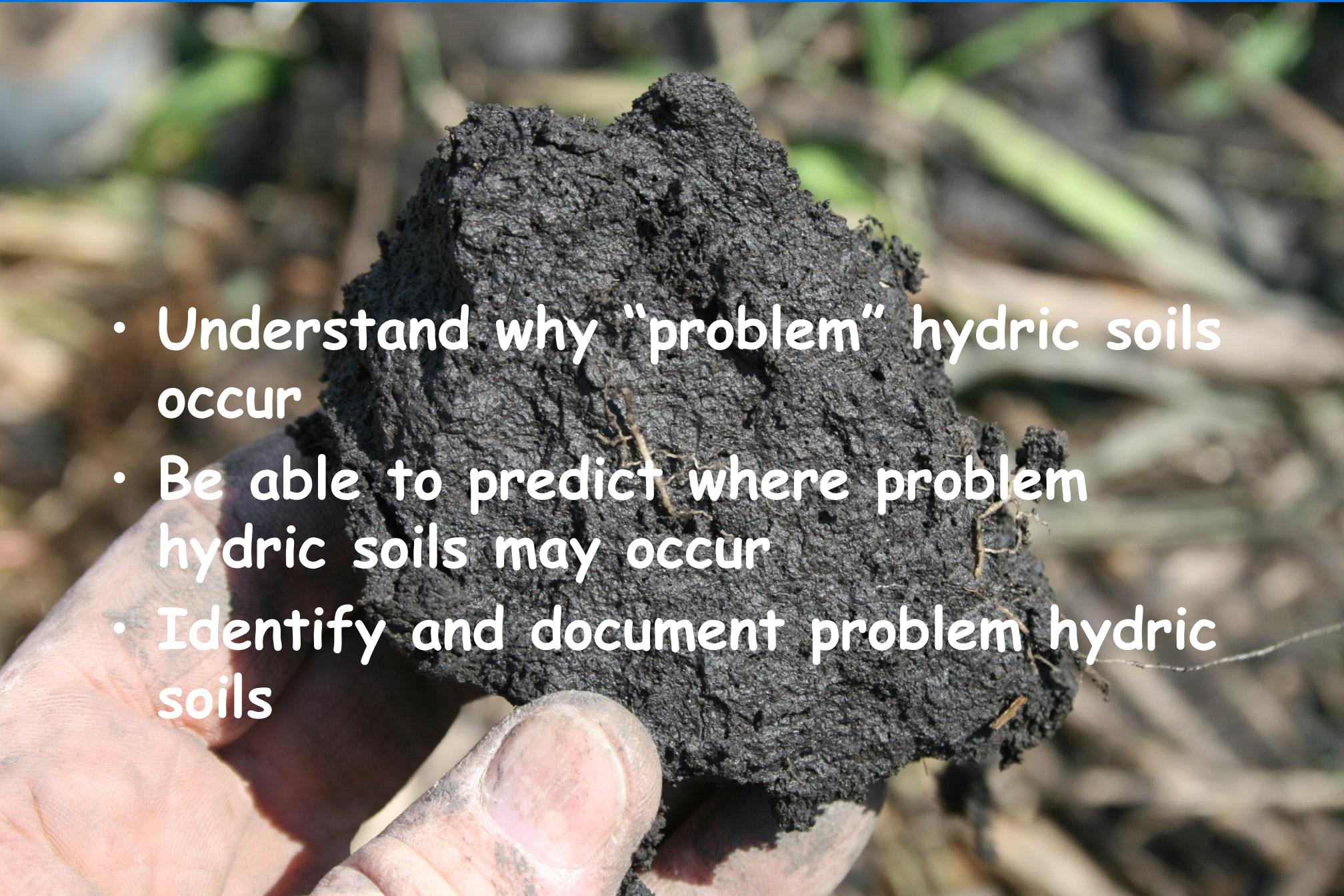


A close-up photograph of a person's hand holding a dark, moist soil sample. The soil is dark brown to black, clumpy, and appears to be very wet, with some roots visible. The background is blurred, showing green grass and brown mulch. The text "Identifying 'Problem' Hydric Soils" is overlaid in white, bold, sans-serif font with a black outline.

Identifying "Problem" Hydric Soils

- 
- A close-up photograph of a person's hand holding a dark, moist soil sample. The soil is dark brown to black, clumpy, and appears to be saturated with water, characteristic of hydric soils. The hand is positioned on the left side of the frame, with the thumb and index finger visible. The background is blurred, showing green grass and brown mulch. Overlaid on the image is a list of three bullet points in white text.
- Understand why “problem” hydric soils occur
 - Be able to predict where problem hydric soils may occur
 - Identify and document problem hydric soils

Problem Hydric Soils

- **Dark A horizons > 12" thick**
 - Mostly Mollisols - Dark colors from high OM mask redox features
- **Soils with little development**
 - Usually Entisols
 - Sandy soils, low OM, recent deposits on floodplains

Reduced Soil Color

Conditions needed to reduce Fe_2O_3 and change soil color to gray

- Air must not enter the soil
 - Soil is waterlogged
- Depletion of oxygen by microbes
 - Organic matter must be present
 - Bacteria must be decomposing OM (soil temp. > 5 C)
 - Dissolved O_2 in water must be removed

Saturated, but not Reduced

- Low organic matter
 - e.g., sands
- Oxygenated water
 - slopes, sands and gravels
- Cold temperatures
- High pH

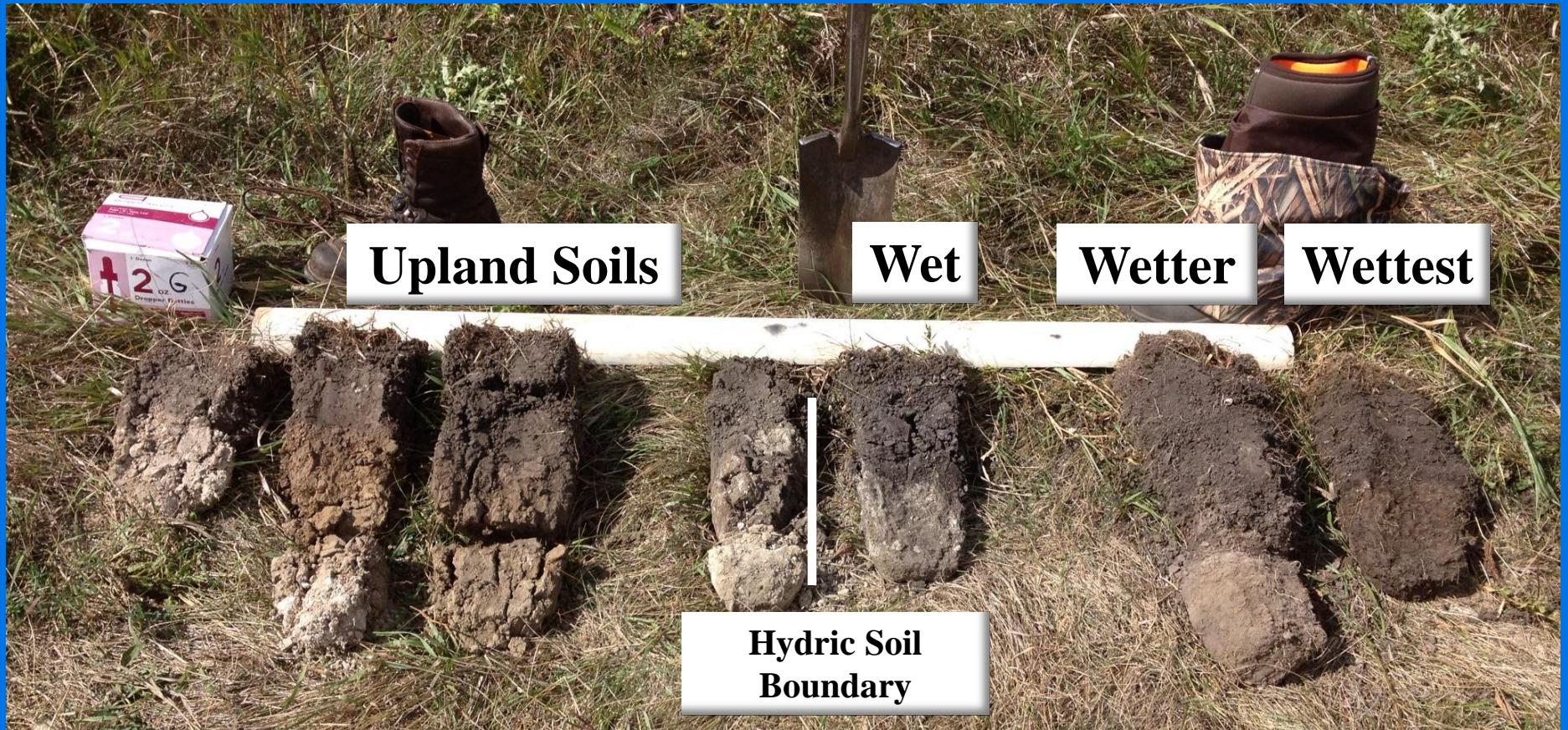
Approaches for Delineating Problem Hydric Soils

- Qualified soil scientists
 - Research literature, monitoring studies
- Compare profiles taken along moisture gradient
 - Transect from known dry to known wet
- Hydric soils list
 - Use with caution

Landscape Transect Approach

- Soils occur as a continuum on the landscape
- Examine a known "wet" soil
- Examine a known "upland" soil
- Use judgment to discern the boundary

Typical Glacial Till Catena



Soils with Dark-Colored Surfaces

- Most are Mollisols
- Dark-colored mineral soils with accumulation of OM in the upper part
- Typical prairie soils.



Why a Problem?

- Apparent lack redoximorphic features in upper part
 - redox features, where present, are often masked by dark colors due to OM
- Commonly disturbed by tillage



Observe

- Critical to look at the color of the B horizon
 - often more than 10" deep
- Whole profile color trends (dry to wet)
 - Hue - trend from red to yellow
 - Value and Chroma - decrease
- A horizon
 - becomes thicker, darker, yellower, some redox
- B horizon
 - yellower, grayer, redox

Color Trends



A Horizon Trends



- ▶ Thicker
- ▶ Darker
- ▶ Yellower Hue
- ▶ Redox Features
- ▶ Increase In Organic Matter

Soils with Dark-Colored Surfaces

"Tricks of the Trade"

- Color below Dark Surface
- Rub for redox
- Edge effect *
- Landscape position *

Recently Deposited Soils

- mineral soils
- no, or little, development of pedogenic horizons
- young soils on unstable landscapes
 - e.g., floodplains
- sandy soils



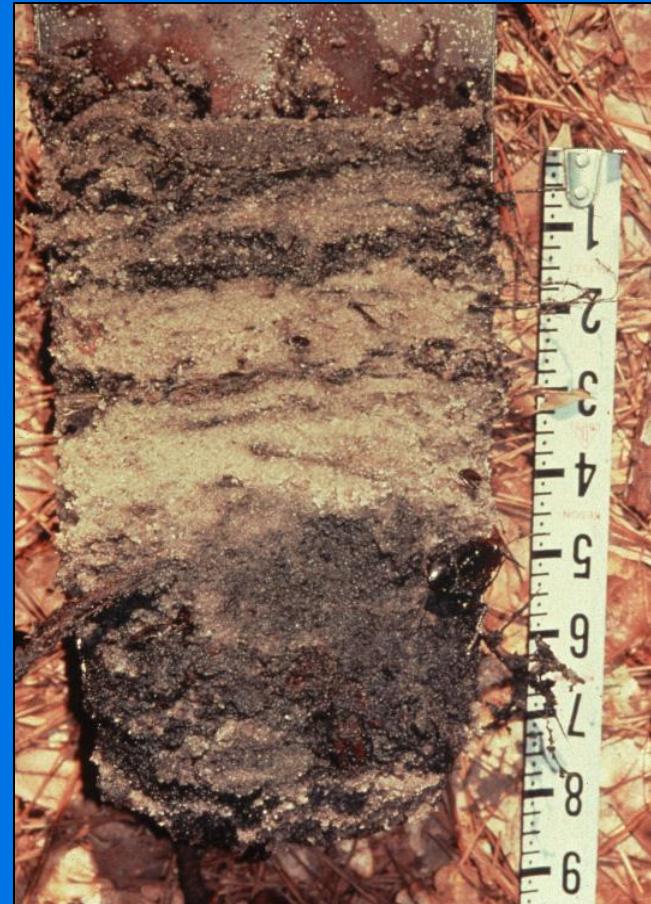
Why a Problem?

- Lack redoximorphic features in upper part
 - recently deposited material
 - sandy materials low in organic matter



Fluvaquents- stratified wet soils on floodplains and deltas

- May have to rely on evidence of flooding
 - stratifications
 - hydrologic indicators
 - hydrologic data



Sandy Entisols - Soils with little or no evidence of pedologic development

- Not necessarily "recent" origin
- Sandy parent material
 - little weatherable minerals
 - lack of organic matter



NRCS Technical Guidance for Compliance

Technical Note No. 1

- Procedure for Problematic Hydric Soils Determination - Seasonally Ponded Soils

Technical Note No. 2

- Procedure for Problematic Hydric Soils Determination - Moderately to Very Strongly Alkaline Soils

Still not sure?

- Landscape position, landscape position...
 - compare soil profiles from various landscape positions
- Look at the entire soil profile
 - top to bottom, not just 10" or immediately below the A
- Indicators of wetland hydrology and a hydrophytic plant community
- When all else fails....

... MONITOR !!

