HANDOUT:

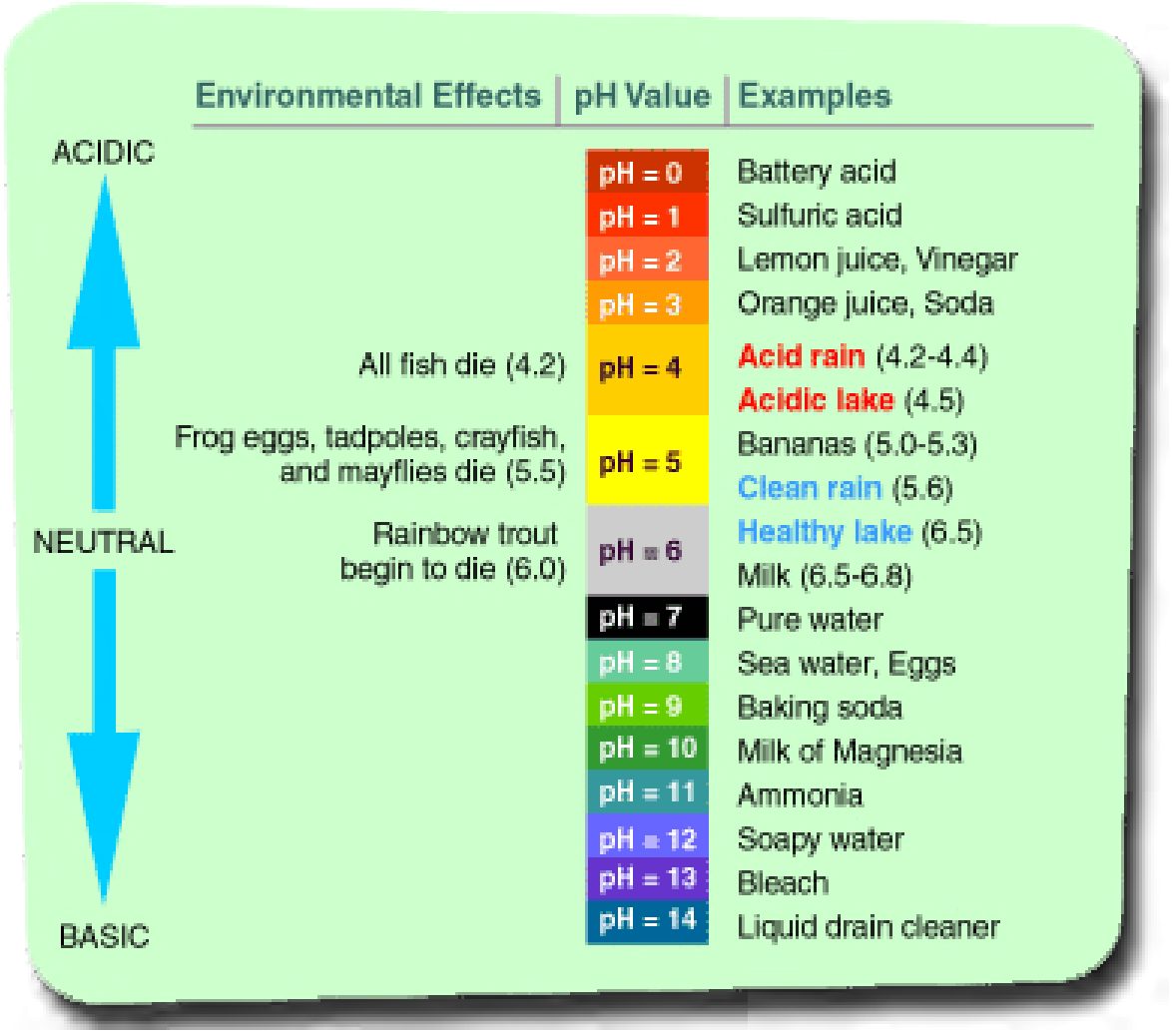
SOIL NUTRIENTS AND pH

"Twenty nutrients have been identified that are required by plants. Of these, nitrogen, phosphorus, and potassium are required in relatively large amounts. Nitrogen is associated with lush vegetative growth, adequate phosphorus is required for flowering and fruiting, and potassium is necessary for durability and disease resistance. Calcium, sulfur, and magnesium are also required in comparatively large quantities. These six nutrients are referred to as **macronutrients.**

The other nutrients, referred to as **micronutrients**, are required in very small amounts. These include such elements as copper, zinc, iron, and boron. While both macro and micronutrients are required for good plant growth, over-application can be as detrimental as a deficiency. Over-application of plant nutrients not only may impair plant growth, but may contaminate groundwater by leaching through the soil or pollute surface waters by washing away" (USDA, n.d).

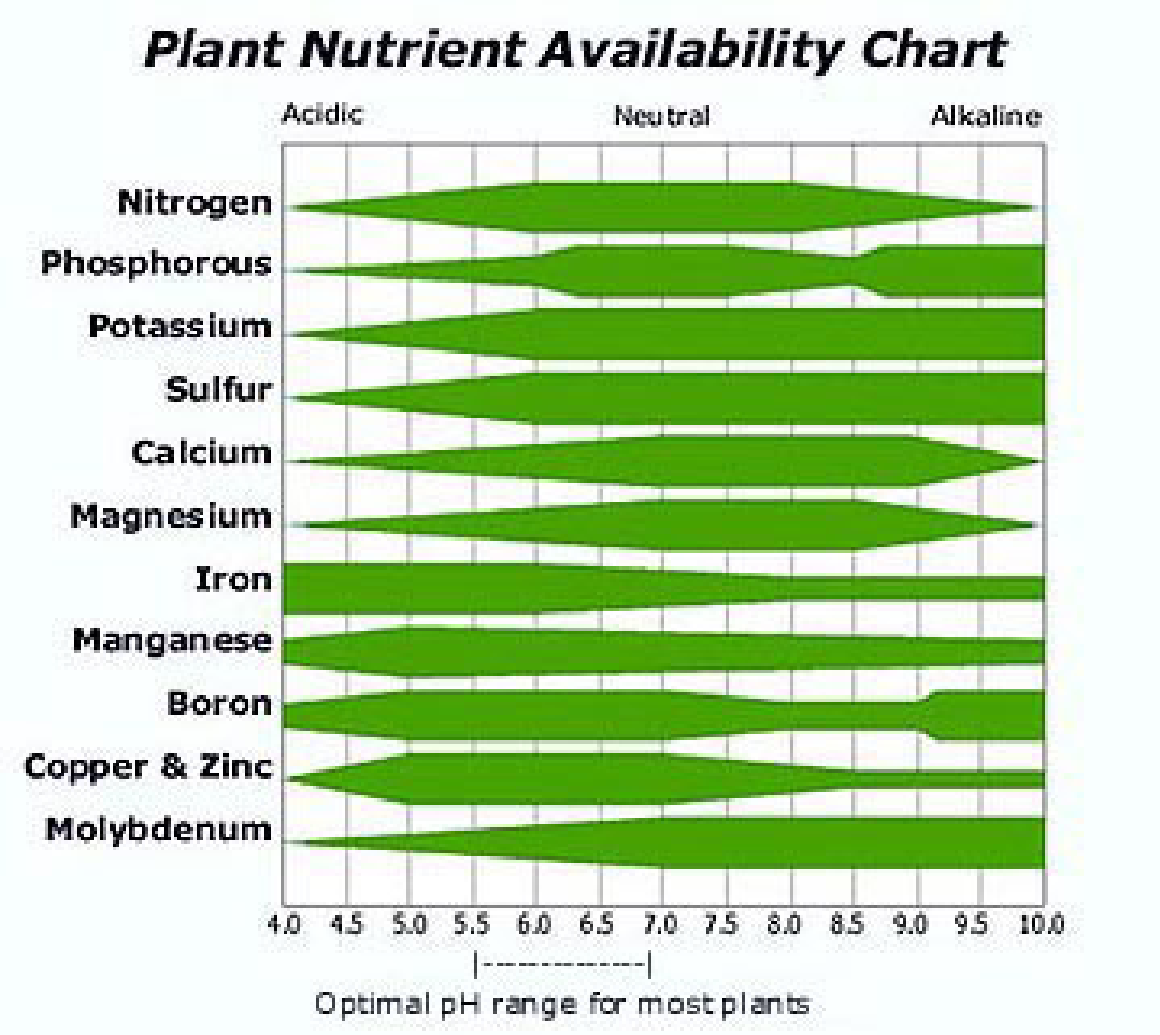
REFERENCE:

USDA, Natural Resources Conservation Service. (n.d.). *Nutrient management in your backyard.* Retrieved from https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/newsroom/features/?cid=nrcs143_023538



ph Scale

Public domain. Appeared on USGS website at https://www.usgs.gov/media/images/ph-scale



USDA Resources Conservation Services. National Soil Survey Manual.

MICHIGAN STATE UNIVERSITY | Extension

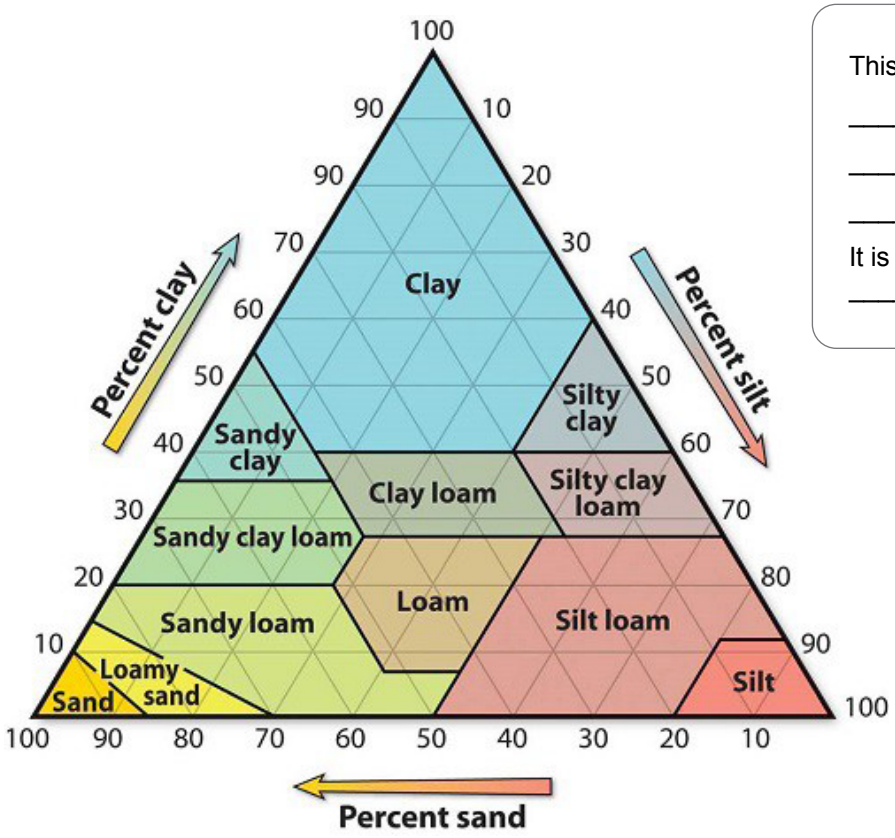
MSU is an affirmative-action, equal-opportunity employer, committed to achieving excellence through a diverse workforce and inclusive culture that encourages all people to reach their full potential. Michigan State University Extension programs and materials are open to all without regard to race, color, national origin, gender, gender identity, religion, age, height, weight, disability, political beliefs, sexual orientation, marital status, family status or veteran status. Issued in furtherance of MSU Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Jeffrey W. Dwyer, Director, MSU Extension, East Lansing, MI 48824. This information is for educational purposes only. Reference to commercial products or trade names does not imply endorsement by MSU Extension or bias against those not mentioned.

HANDOUT:

SOIL TEXTURE

SOIL TEXTURE ANALYSIS

1. Take a simple glass jar and fill it halfway with soil.
2. Wet the soil until it becomes the thickness of mud.
3. Tap the jar to settle the soil.
4. Using a marker, mark the level of soil on the jar.
5. Add water to the top of the jar.
6. Shake the jar till the soil and water are mixed.
7. Let the soil settle out for 1 minute, then mark the level of soil in the jar. This is the portion that is **sand**. (after settling)
8. Mark the level of the soil in the jar again. The difference between the bottom mark and this next mark-up is the **silt** portion.
9. The difference between the silt mark and the initial mark (step 3 above) is the portion of **clay**.



This soil sample has:

_____% clay

_____% silt

_____% sand

It is a

_____

USDA textural triangle showing the percentages of clay, silt, and sand in the 12 basic texture classes.

Source: Soil Science Division Staff. 2017. Soil survey manual. C. Ditzler, K. Scheffe, and H.C. Monger (eds.). USDA Handbook 18. Government Printing Office, Washington, D.C. (page 125)

https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/ref/?cid=nrcs142p2_054261

MICHIGAN STATE UNIVERSITY | Extension

MSU is an affirmative-action, equal-opportunity employer, committed to achieving excellence through a diverse workforce and inclusive culture that encourages all people to reach their full potential. Michigan State University Extension programs and materials are open to all without regard to race, color, national origin, gender, gender identity, religion, age, height, weight, disability, political beliefs, sexual orientation, marital status, family status or veteran status. Issued in furtherance of MSU Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Jeffrey W. Dwyer, Director, MSU Extension, East Lansing, MI 48824. This information is for educational purposes only. Reference to commercial products or trade names does not imply endorsement by MSU Extension or bias against those not mentioned.

© 2020 Michigan State University Board of Trustees. | **Michigan State University Extension** **4-H Forestry Camp Instructor Guide**