



HUMANITIES AND THE SUNSHINE STATE

TEACHING FLORIDA'S CLIMATES
In partnership with the Florida Humanities Council

JUNE 19-23, 2017 GAINESVILLE, FLORIDA

ACTION PLAN TEMPLATE

Teacher(s): Mr. Salvatore Grilli

Grade(s): High School 9-12

Subject(s):

Chemistry

Title of Lesson:

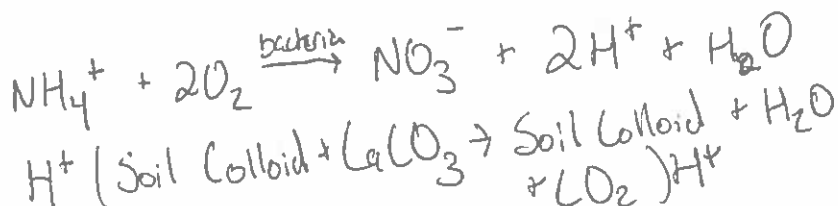
Soil Chemistry 101

Learning Objectives:

Students will test the effects of adding products to soil.
Students will learn about pH, and what factors affect it.
Students will also learn about the agricultural history of Florida and discuss different crops in Florida.

Standards Addressed:

Relating acidity and basicity to hydronium and hydroxyl ion concentration is pH.



Lesson Outline:

Students should have knowledge of pH already. They will answer preliminary questions on a data sheet. They will gather all the materials needed along with bring in a ~~test~~ ^{check for sulfur} test sample. They will set up 4 samples, label them A, B, C, D. Sample A ~~Lawn~~ Lawn fertilizer w/ potting soil, Sample B Lawn Lime add to potting soil, Sample C control potting soil, and Sample D test sample from home. Students will add water and using pH strips or a meter. Test the different samples. Students can be asked questions about acids & bases and what effects they may have on the environment.

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Systems thinking connection (learning habits and/or tools used): could be a lesson before talking about nitrate and other polyatomic ions.
The lab would be a pre-lesson to discussing the nitrogen cycle and how the future of farming can be changed. Including discussing the problems of run off.
I think it's important for students to discuss where the water goes.

Learning Strategies:

Kinesthetic lab report for visual learners, and questions throughout for auditory learners.

Science Concept(s):

pH, acid, base, alkaline, plants, agriculture, nitrogen cycle
where does the acid go? could also get nitrate strips

Humanities Concept(s):

Throughout history farmers have been able to change the composition of soil, dust bowl, cotton plantation, and especially here in Florida the orange groves.

Student Assessment Strategies:

Lab report, could also assign a research project on different crops or plants and research different pH levels.

Benefit to my students:

The system thinking about the nitrogen cycle after could raise questions about what happens to the nitrates, what if there is so much for the ecosystem to handle? Have you seen issue with too much nitrates in water? Have you seen a algae bloom? What about the spring?

Resources and Materials (supplies needed for activities):

Distilled water
Potting soil
Cups
pH strips or a meter
Lawn Lime (~~limestone~~) (calcitized limestone) (Increased pH)
Fertilizer (decreased pH)