

Nutrient Mobility Lesson Plan

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Grade/Subject: High school/Soil Science

Lesson Focus: Soil Nutrients

Materials / Equipment Needed: Review nutrient/deficiency presentations, Handout ([def_symp1](#), and [def_symp2](#)), deficiency photos, 12 White Carnations, Food Coloring, Paper Cups, Water

TEKS Addressed:

§119.28 Plant and Animal Production. High School. Agriculture. K&S 3-D&E

Grade 2: 112.4.b7A

Grade 3: 112.5.b2 A-E, 3 A&C, 4 A&B

Grade 4: 112.6.b2 A-E, 3 A&C, 4 A&B

Grade 5: 112.7.b2 A-E, 3 A&C, 4 A&B

Grade 6: 112.22.b2 A-E, 3 A&C, 4 A&B

Grade 7: 112.23.b2 A-E, 3 A&C, 4 A&B

Grade 8: 112.24.b2 A-E, 3 A&C, 4 A&B

Int Phys Chem: 112.42c2 A-D, 3 A&C

Objectives:

Know the definition of deficiency, nutrient, toxicity, macronutrients, micronutrients.

Identify the plant deficiencies from pictures.

Evaluate a plant to identify the nutrient absorption rate.

Preparation:

Crush the bottom 5 to 7.5 cm (2 to 3 inches) of the carnation stems using a soft mallet. Place minimum of 7.5 cm (3 inches) tap water in 12 cups. Add food coloring to water to obtain red, blue, yellow, purple, orange, green, and six other colors, including black (or nearly so).

Anticipatory:

Get the class into 10 groups (depends on class size) have each group send up a representative to get a carnation and a cup of water with food coloring. Explain that the lesson is on soil nutrients and each color is representative of a different nutrient. Have the students put the carnation in the water, and then set it aside until the end of class.

Input:

Power point presentation, hand out of slides, hands on experiment, lecture, memory game in envelopes

Modeling:

To start the class the teacher will show the students how to set up the carnation in the cup with the food coloring and water. The teacher will use the power point and lecture to teach the students the information. At then end of the lecture the teacher will hand out the copy of the power point slides for the students to use later as a study guide.

Questioning:

What do you predict will happen to the color of the carnation after it is in the colored water for several minutes?

Why does this happen?

Explain the differences in the different colors and why they absorb differently.

What is the difference between micro nutrients and macro nutrients?

Closure:

The teacher first covers the results of the carnation experiment. Showing how the different nutrients have different absorption rates. Each group shows their flower to the rest of the class. Then the teacher hand out envelopes containing a short memory game. The students will identify and match the nutrient deficiency symptom to the nutrient. They will do this in the same groups as before.