

Plant Nutrient Education Units

Elementary – High School Students



California Foundation for
Agriculture in the Classroom

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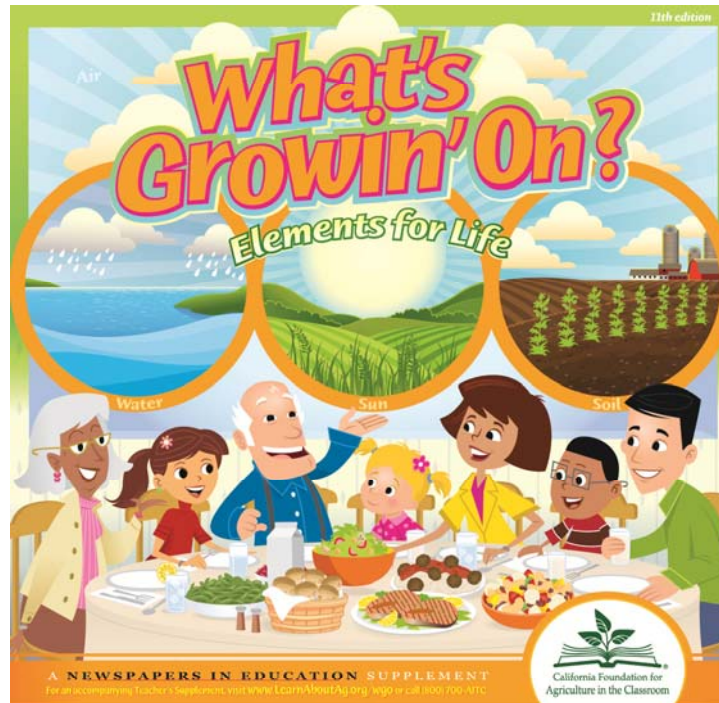
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Agriculture in the Classroom

- Mission: *Increase awareness and understanding of agriculture among California's educators and students.*
- All grade levels
- Programs: curriculum, educator's conference, classroom grants, farm days, writing contest and more
- Since 1986



Working Towards our Mission...



Teacher Resources

Ag-Bites

6 Comparing Apples and... Earth?

Explore how much of the Earth's surface is needed for growing food for a world of people.

Activity

1. Hold up an apple to the class and tell the students that it represents Earth.
2. Slice the apple into fourths. Set aside three of the fourths, as they represent water on the Earth's surface.
3. Cut the remaining slice in half. Set aside one of the halves as uninhabited deserts, swamps and Arctic areas.
4. Divide the remaining piece into fourths. Set aside three of the pieces for land that is too rocky, wet, hot, or poor for crop production.
5. The remaining piece is 1/16 of the original apple. Carefully, peel this section. Hold up the peel and explain that it represents the thin layer of soil that is available for producing all of the world's food crops.

Classroom Discussion

- What is the key message underlying the activity?
- What actions can students take to care for their patch of this precious Earth—as individuals, as a class and school, with their families, in their community?
- How are farmers stewards of the land?
- What is sustainability? Introduce the concepts without using the word itself, which can be difficult to define. Produce concept maps based on discussion.
- How do natural resource management, farming techniques, feeding the world, land care, and environmental management play a role in food production in California or your specific region?

Classroom Activities

History

- Research different farming practices used in the past and create a chart with the pros and cons of each one. Report your findings to the class.

English-Language Arts

- Have students journal about this activity, what they learned from the demonstration, and different ways they can take care of the Earth.

Visual and Performing Arts

- Create art stamps using different tools (paperclip, toothpick, popsicle stick) to make designs in the apple pieces. Mix paints to produce different colors and dip the stamps in paint to create art.
- Use the activity as a prompt or an example for students to produce a game, puzzle, poster or other means of delivering a similar message.

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Grades 3-5

Materials

Enough for each student:

- Apple (or a paper cutout of an apple)
- Knife
- Chopping board or plates
- Paper towels or wet wipes

Tip

A demonstrator could cut one apple and students eat an approximate amount.

Watch Online!

See a video of this Ag-Bite at www.youtube.com/LearnAboutAg

California State Board of Education Content Standards

Grade 3

Math: Number Sense 3.1, 3.2; Mathematical Reasoning 2.4, 3.1, 3.3

Science: Life Sciences 3b, 3c; Investigation and Experimentation 5c

History/Social Science: 3.1.1

Health Education: Nutrition and Physical Activity 7.2.P, 8.2.P

Grade 4

Math: Number Sense 1.5; Mathematical Reasoning 2.3, 3.1, 3.3

Science: Life Sciences 3a; Earth Sciences 5a, 5b, 5c

History/Social Science: 1.3

Grade 5

Math: Mathematical Reasoning 3.1, 3.3

Science: Earth Sciences 3a, 3d

Health Education: Nutrition and Physical Activity 1.6.P, 6.1.P, 8.1.P

Adapted from materials by the National Resource Conservation Service

Teacher Trainings & Conferences



Agriculture in the Classroom

- Average of 30 teacher requests for education packets per week
- More than 1 million students reached annually
- Monthly e-news goes out to every principal in the state
- Average of 117,000 visitors to website/yr



Imagine This...

Farm Days



Literacy for Life Grants



FREP Grant Funded Curriculum Series

- *Educator's Guide to Fun With the Plant Nutrient Team (K-3 Grade)* in progress
- *What Do Plants Need to Grow?*
12 lessons (2– 4 Grade) completed
- *How Much is Too Much? How Little is Too Little?* 11 lessons (5-8 Grade) in progress
- *Chemistry, Fertilizer, and the Environment*
5 lessons (8-12 Grade) completed



Unit Development

- Hands-on
- Science-based
- Relevant to students and teachers
- Teach students about
 - Plants
 - Nutrient requirements
 - Importance of fertilizer in producing food

Unit Development

- Writing meeting - educators and industry
- Draft lessons reviewed by staff and industry
- Lessons piloted in classrooms
- Liberty Ranch, Galt
Haley Clement
- University Prep.
San Jose
Richard Prizznick

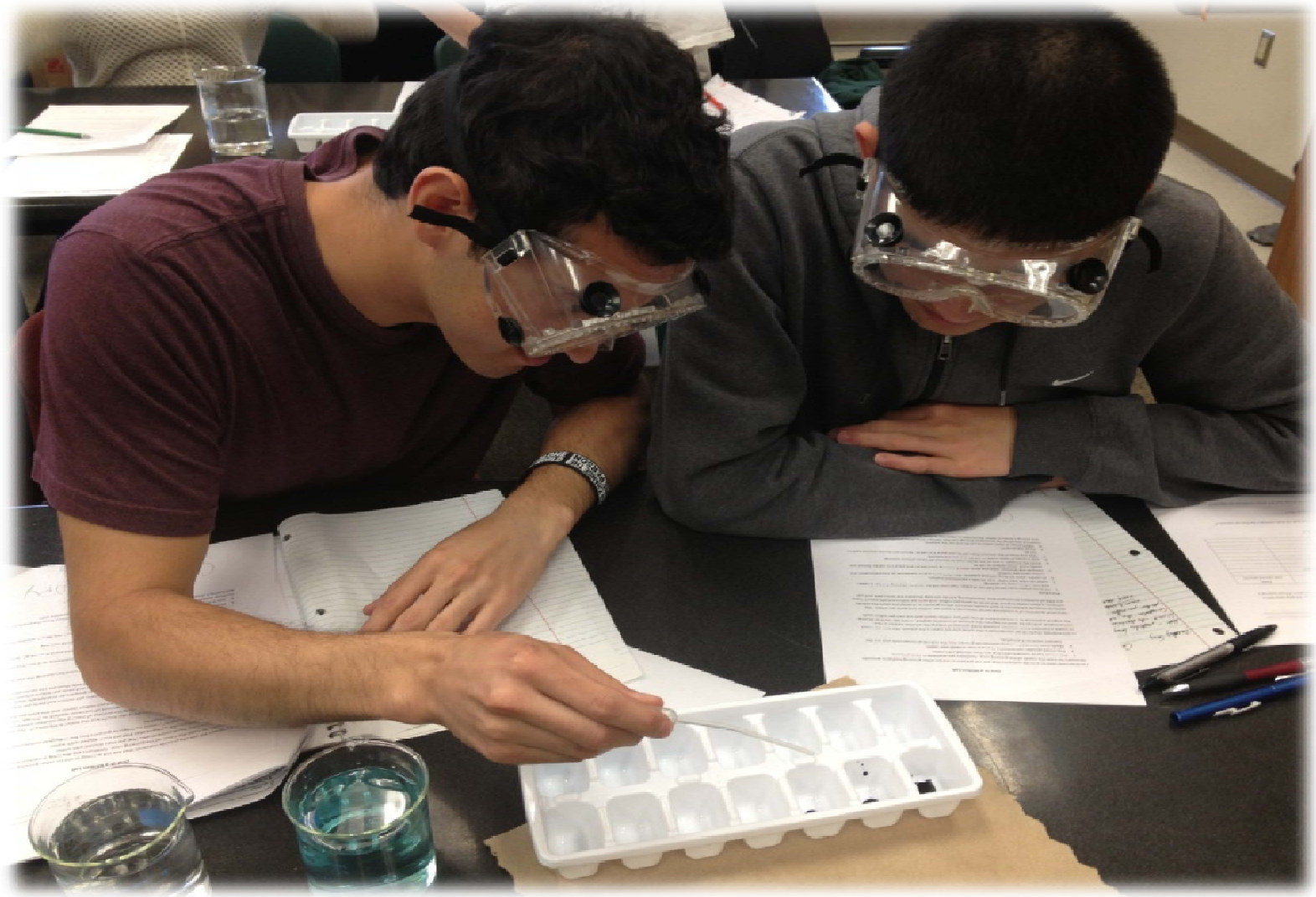




Bringing Application & Relevance to the Classroom

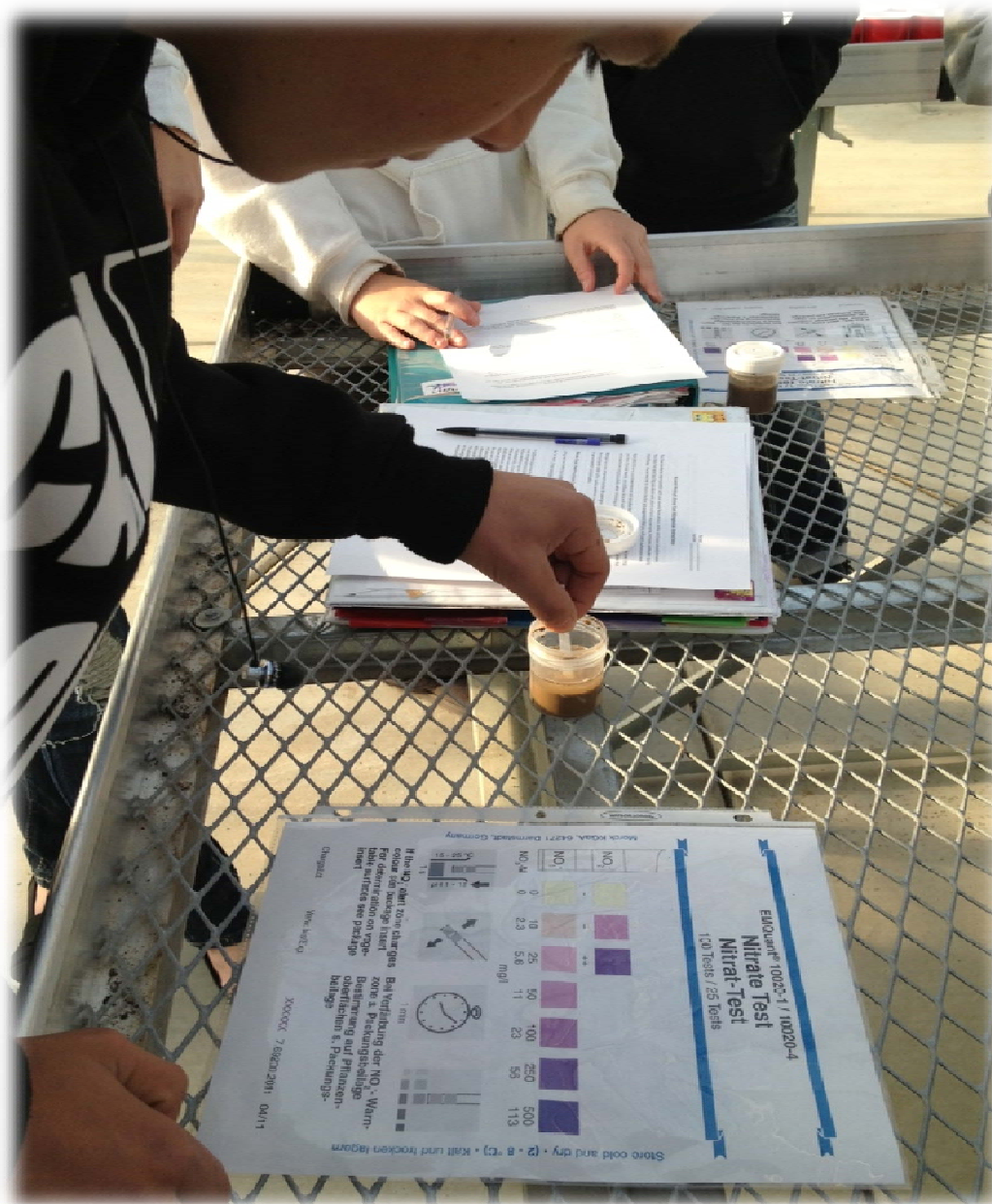
- Ag Chemistry - Emerging course, limited resources
- AITC's *Fertilizer, Chemistry & the Environment* lessons:
 - Make challenging concepts relevant
 - Provide inquiry-based learning for Common Core Standards transition

Parts Per Million Lab



Students learning about nutrient availability at different soil pH levels





Students Conducting Nitrate Quick Test

Results

- *Chemistry, Fertilizer, and the Environment*
3,747 downloads
 - Distributed 1,000 copies, demand for more
- *What Do Plants Need to Grow?* 3,015 downloads
 - Distributed 500 copies

Teacher feedback:

- *I believe this is going to be a great way to utilize chemistry in my ag classes.*
- *I loved the stand up activity for the periodic table with the yellow ribbons*
- *It will fit into common core standards and fits perfectly into my solutions unit. Students will be able to utilize the new school garden to do these activities.*
- *Thank you! It was fun and will be helpful for me as an AP environmental science and biology teacher.*

Thank You!

- Fertilizer Research and Education Program
- Technical Reviewers: Tim Hartz, Timothy Doane, Stuart Pettygrove, Thomas Bottoms, California Farm Bureau Federation, and California Fertilizer Foundation
- Writing Team Educators: David Rose and Holly Whitworth
- Pilot Teachers: Haley Clement and Richard Prizznick

Copies of units available at break or downloadable from:

www.LearnAboutAg.org/lessonplans