

Unit: Climate Change and California Agriculture

Course: Earth Science, Earth Environmental Science, or Introduction to Agriculture

Unit Goals and Objectives:

- Students will be able to identify growing regions in California.
- Students will be able to identify major crops for California and their county.
- Students will be able to map water movement in California, specifically water used for irrigation.
- Students will be able to predict changes in snow pack and growing seasons based on IPCC models.

Standards:

- Earth Science Standards:
California Geology
 9. The geology of California underlies the state's wealth of natural resources as well as its natural hazards. As a basis for understanding this concept:
 - a. Students know the resources of major economic importance in California and their relation to California's geology.
 - c. Students know the importance of water to society, the origins of California's fresh water, and the relationship between supply and need.
- Agriculture Standards
 - C1.0 Students understand the role of agriculture in the California economy:
 - C1.1 Understand the history of the agricultural industry in California.
 - C1.2 Understand how California agriculture affects the quality of life.
 - C1.3 Understand the interrelationship of California agriculture and society at the local, state, national, and international levels.
 - C1.4 Understand the economic impact of leading California agricultural commodities.
 - C1.5 Understand the economic impact of major natural resources in California.
 - C2.0 Students understand the interrelationship between agriculture and the environment:
 - C2.1 Understand important agricultural environmental impacts on soil, water, and air.
 - C2.2 Understand current agricultural environmental challenges.
 - C2.3 Understand how natural resources are used in agriculture.

Lesson Titles and Short Description

Day 1-2: California Agricultural Production Regions

Each student will receive a map to label agricultural regions and to label the commodities primarily grown in each region. Students will break into groups and produce a larger map in which they will “collage” magazine and newspaper pictures of products onto the map.

Day 3: County Agricultural Products

Student pairs will receive a handout for a specific crop and will make a poster to present in front of the class that shows the product, where it is grown in the county, how much money it produces, its growing season, and basic practices for production.

Day 4-5: California Agricultural History

Present basic agricultural history in California and challenges early farmers/ranchers faced. Present video: **Cadillac Desert: Mulholland's Dream (Water and the Transformation of Nature) (1997)**. Have students make a fact/react list on what they learned from the video. Discuss at end.

Day 6-7: Global Climate Change

Introduce global climate change. Student teams will produce a power point presenting different changes that may be occurring utilizing IPCC graphs and models. (Snow pack, temperature, water temperature, ocean currents, oceans rising, etc). Present to class.

Day 8: Global Climate Change and its effect on California Agriculture

Place posters around room with different titles on them (things that can be effected my climate change- crops, animals, transportation, water). Students will have a “gallery walk” and write down ideas how each can be affected by climate change. Discuss.

Day 9-11: Water Constraints as a Result of Climate Change

Teams of 4 will decide on one water topic to write legislation and actions that can be taken to adapt and mitigate the problem. (They should do research on probably of effectiveness) Produce a pamphlet. Present findings and pamphlet to class.

Day 12: The County and Climate Change

Student groups, utilizing the information they researched earlier on their county crop, will determine what changes will need to happen to produce this crop, and determine the likeliness that the crop will continue to be produced in their county. Present findings.

From: **Michelle Giguere** <mgiguere@wjusd.org>

Date: Fri, Jul 11, 2008 at 11:11 AM

Subject: Michelle Giguere Unit Plan

To: lmartindale@ucdavis.edu