Lesson 3: Making Things Grow—Early Experiments

Lesson Overview: This lesson will explain how one of the first communities in Orange County – Anaheim – was established as a farming community; identify the challenges faced by the immigrants who settled it; and, allow students to compare plant growth under varying environmental conditions.

Expected Learning Outcomes:

In this lesson, students will be able to:

- Identify some of the contributing factors – rich soil, mild climate, local ports, and determined developers/entrepreneurs – that allowed Anaheim to thrive and become a major economic force in Orange County agriculture.
- Name at least three challenges the immigrants faced when trying to grow their crops.
- Explain the basic conditions and elements needed for crops to grow successfully and discuss how changes in these conditions can affect a plant's growth.

Correlations to California's Content Standards:

- History-Social Studies: 3.1; 3.3; 3.5; 4.1; 4.2; 4.3; 4.4
- English-Language Arts (Listening and Speaking): 3.1
- English-Language Arts (Writing): 3.2
- English-Language Arts (Written and Oral Language Conventions): 3.1
- Sciences (Life Sciences): 3.3; 3.5
- Mathematics (Statistics, Data Analysis, and Probability): 3.1
- Mathematics (Mathematical Reasoning): 3.1; 3.2; 3.3
- Visual and Performing Arts (Creative Expression): 3.2; 3.4

Materials:

- Photos:
  - Farmer drying walnuts, Anaheim ca. 1906
  - Laminated grape label from early Orange County farm
- City of Anaheim development plan/map
- Equipment for growing bean plant - four plastic cups, seeds, soil and water. (Teacher to provide as desired)
- Student worksheet to chart plant growth
- Copy of *My Orange County* history book page for this lesson for each student

Target Vocabulary:

Write these words on the board before each lesson to reinforce key lesson concepts:

- colony
- vineyard
- blight
- virus

Starting The Lesson – Activating Prior Knowledge:

- Review teacher background information for this lesson plan.
- Teachers can introduce students to agriculture and the growth cycle of plants. If you have covered plant growth in science, you can remind students of the lesson

The Lesson - Learning Together

- Make connection to previous lesson (#2: From Ranchos to Farming) by explaining to the class the development of the city of Anaheim, starting with its beginning as a part of the Rancho de San Juan Cajon de Santa Ana. While showing the students the city development plan/map of Anaheim, discuss Anaheim's colonization

and planned development by George Hansen, and its rise as a leading producer of grapes and other crops in Orange County.

- Talk about the need for a suitable environment for agriculture, one that is often specific to the type of crop grown (e.g. semi-tropical fruit as a failed crop vs. grapes that initially thrived in Anaheim). As a visual aid, show students the laminated grape label and pass it around the classroom for inspection. Also explain how some factors (disease, drought, etc.) can negatively impact crops.
- Students hypothesize about the conditions essential for plants (crops) to grow.

- OPTIONAL: Conduct an experiment to see which conditions are essential and how varying plants' exposure to these conditions can directly affect their growth.
- Divide students into four groups. Give each group a cup and have students place a few pebbles then a small amount of soil in the bottom of the cup. Place seeds on top of the soil, and then cover with remaining soil until cup is 2/3 full.
- With teacher's guidance, each group selects and labels a condition or "station" for their plant:
  - Station 1: full sun, water daily
  - Station 2: full sun, no water
  - Station 3: no sun, water daily
  - Station 4 no sun, no water
- Have students place their cup in a classroom location that matches their plants' specified condition. Distribute worksheet on charting plant growth to each student. Students can use the My Orange County ruler (printed on the worksheet) to measure each station's plant growth and record it on the worksheet matrix.
- Throughout the duration of the unit, students will monitor all plants and chart their growth using the plant growth worksheet and the ruler. At the conclusion of the unit, students will add their worksheets to their *My Orange County* booklets and identify which environmental conditions contribute to successful plant (agricultural) growth.

Check for Understanding/Assessment:

My Orange County history book page:

- Distribute page to each student. Either alone, in small groups or as a class, students will complete the sentences using target vocabulary words from the lesson. Have students review and self-correct.
- Students add this page to their *My Orange* County history book.

Beyond The Lesson – Extension Activity

- Have students pretend they are farmers shipping their favorite crop to market. Students then make a shipping label for this fruit that will go on the outside of the crate. Instruct students that the label will need to be informative (What crop is it?) and appealing (Who wants to buy it?).
- Students add their label to their *"My Orange County"* history booklet.

Teacher Background

The break up of the old Mexican ranchos in the 1850s and '60s paved the way for growth and development in the area that would become Orange County. The first important project was in 1857, when a group of German immigrants living in San Francisco arranged to buy a portion of the old Rancho San Juan Cajon de Santa Ana for $2 an acre. They had decided to found a co-operative wine-making "**colony**." They called it Anaheim.

George Hansen, a civil engineer, was hired to lay out and plant the first **vineyards** in fifty twenty-acre lots, plus fifty home lots and fourteen village lots for public buildings. An irrigation ditch was also built to bring water down from the Santa Ana River. Because of this organized effort, Anaheim is sometimes credited as the first "planned community" in Orange County.

The first settlers arrived in 1859, but

found life difficult. Water was a key issue, with drought and flood years reeking havoc on the young community. Transportation was also a problem. Better roads were needed, as were ways to ship goods via waterways. Thus, in1864 a port was established at Anaheim Landing near Seal Beach. Anaheim's wine industry began to flourish, and farmers in other nearby communities began planting grapes for wine and raisins.

But in the late 1880s, a mysterious **virus** began to attack local vineyards. This **blight** was eventually identified as a *phylloxera* (Pierce's Disease), a virus spread by insects. Thousands of acres of vineyards were destroyed, and the local wine industry never recovered.

Throughout the 1870s and '80s, local farmers were experimenting with all sorts of different crops, hoping to find what would grow best in the Orange County area. Southern California was being touted as a semi-tropical paradise in those days, where anything would grow, leading some farmers to even try semi-tropical fruits such as bananas, pineapples and guavas – all of which failed. More successful were wheat and barley, walnuts, apricots, vegetables and berries. Celery and sugar beets became popular in the 1890s, and were grown extensively in the northwestern part of the county. Lima beans did well in the coastal plains from Huntington Beach down to the Irvine Ranch. Apples were briefly successful in Costa Mesa, but later faded away. Avocados were introduced in the northern part of the county in the 1910s, but did not become a major crop until after World War II.

But, eventually, it was citrus crops – especially oranges – that would become the area's biggest producer.

Your Notes Here

Use this space to make notes about the lesson, additional resources used, teaching reminders for next time, etc.

Worksheet~Plant Growth Chart (Lesson 3)

Use the following worksheet to record your observations about plant growth in various conditions. Use the ruler below to measure plant growth.

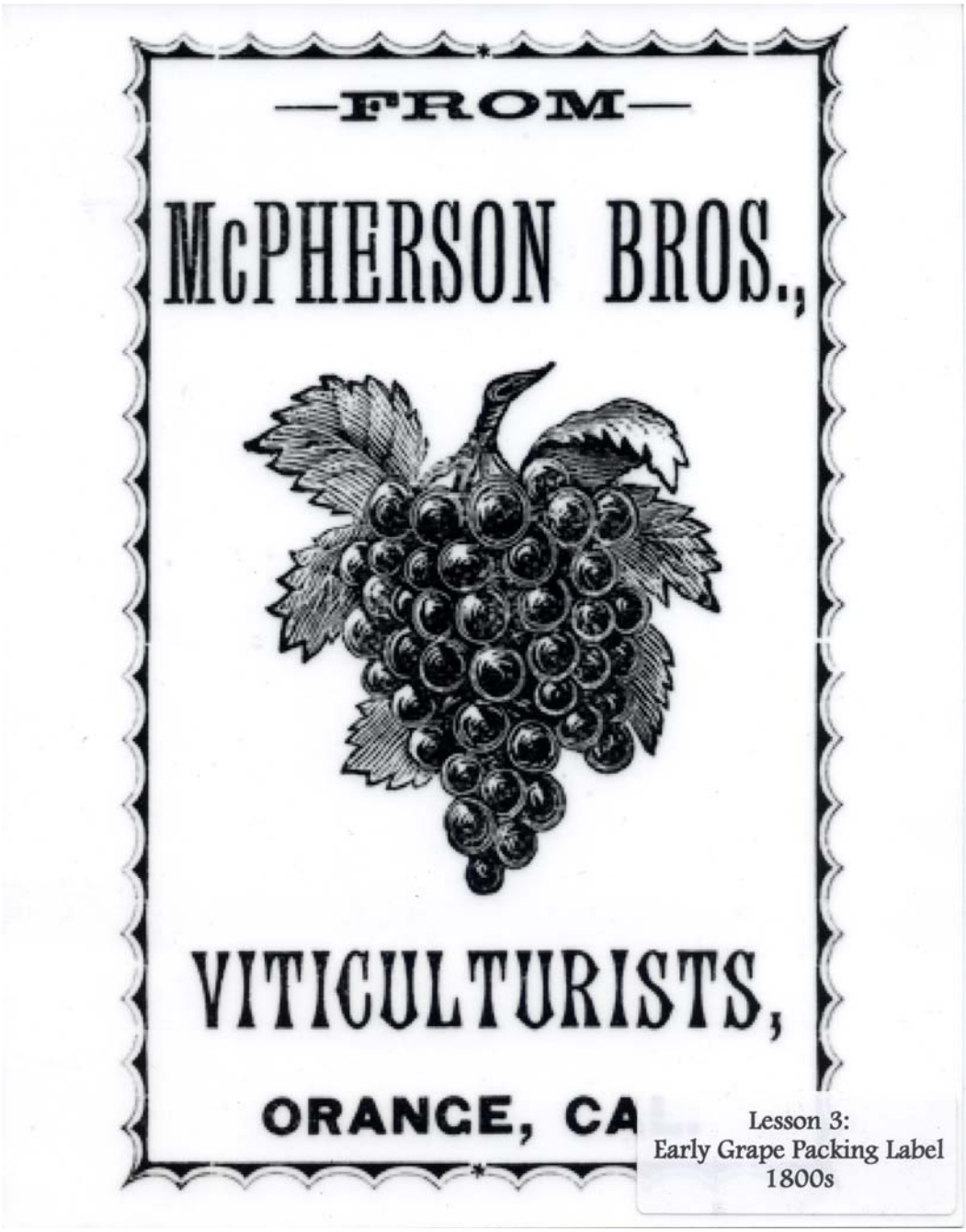
OBSERVATIONS	Day 7	Day 14	Day 21
Plant 1			
Plant 2			
Plant 3			
Plant 4			

Use this ruler to measure plant growth.

Drying Walnuts in Vats (Lesson 3)

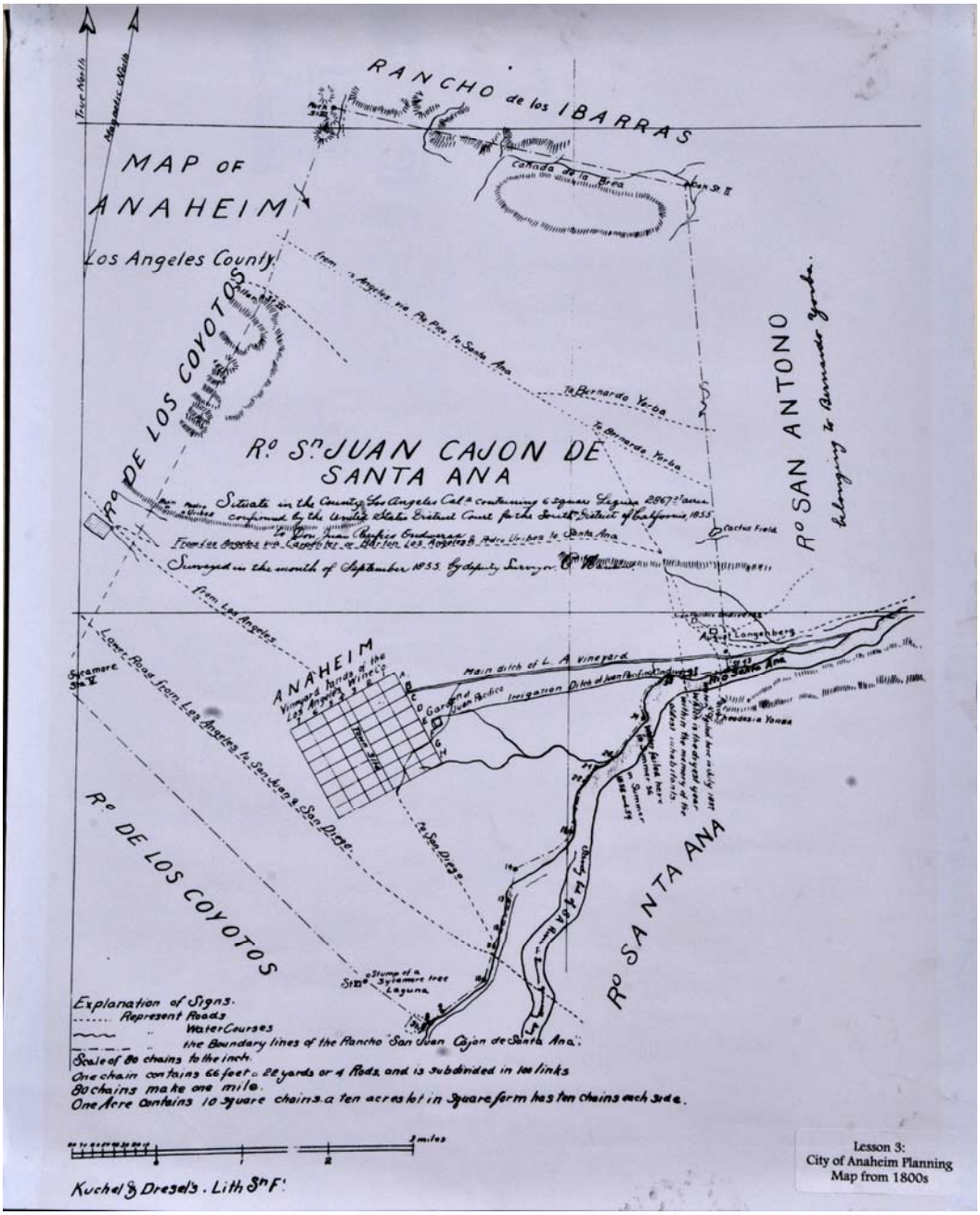
Lesson 3:
Farmer Drying Walnuts in vats, Anaheim, ca. 1906

Early Grape Packing Label (Lesson 3)



Lesson 3:
Early Grape Packing Label
1800s

Early Anaheim Planning Map
(Lesson 3)



Lesson 3:
City of Anaheim Planning
Map from 1800s

My Orange County History Book

Lesson 3: Making Things Grow—Early Experiments

Reiser residence and vineyard, Anaheim, around 1864 or 1866

Directions: Using the vocabulary words from this lesson, fill in the sentences below. Use each word only once.

blight • colony • vineyards • virus

1. Orange County's first community started as a _____ that became known as Anaheim.
2. With a strong water supply, Anaheim's _____ grew well and soon Orange County became known for its successful grape farming.
3. In 1884, a mysterious _____ attacked the grape crops and the vines began to die.
4. Two years later, the grape farmers were forced to pull out dead vines and this crop _____ brought Anaheim's grape crop to an end.