ECONOMIC GEOGRAPHY

Issue: Sustainable agriculture

Lesson inquiry: How can farm management optimize yields and profits while preserving resources?

Career connection: Brent Sams, Viticulture Research Scientist at E&J Gallo Winery

GEOGRAPHIC QUESTIONS:

- *How does the environment affect farm management?*
- *What are the advantages of precision agriculture?*

RELATED GEOGRAPHY CAREERS:

- *Precision Agriculture Technician*
- *Soil and Plant Scientists*
- *Conservation Scientists*

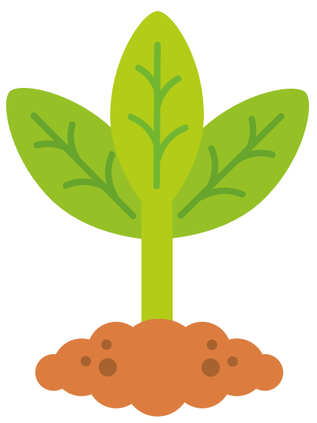


Photo: A farm with many sections and buffer zones

APPLICATIONS:

- *Apply remote and proximal sensing to observe and measure inter- and intra-field variability in crops.*
- *Define a decision support system for managing when and how much to irrigate a field.*

INTERVIEW DIGEST: BRENT SAMS

"The interaction of geography and computer science is essential for my role, as well as many of the others in my department. At the project level, I work with different types of datasets that must be organized so that they can be analyzed and interpreted together. I rarely start any of this in a GIS, but in a statistics package/program. I don't have a background in computer science or coding/programming, but these have been very useful skills to develop."

Photo: Brent Sams poses in front of a field

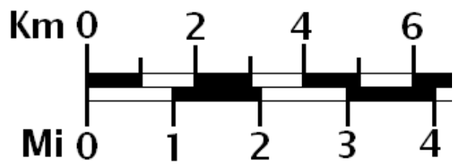
LESSON ACTIVITY EXAMPLE:

Have students use U.S. ArcGIS StoryMaps to define sustainable and precision agriculture as well as include imagery from USGS National Agriculture Imagery Program (NAIP).

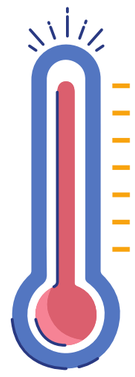
GLOSSARY:

SUSTAINABILITY

RESOURCE



SCALE



FIELD MEASUREMENTS

PROXIMAL SENSING

REMOTE SENSING

SKILLS:

- *R/R Studio*
- *K-means classification with raster datasets*
- *General statistics*
- *GIS*

BACKGROUND RESOURCES:

- *Precision Agriculture defined in literature*
- *Precision Agriculture video*
- *Precision agriculture in California journal article*

DATA:

- *Soil texture*
- *Crop yield*
- *Canopy light penetration*

Photo: A vertical farm with young lettuce

{ RpptforCs : ENCODING GEOGRAPHY }